

Harrison co 1908

Monona co.

cup anemometer

50 revol. = $\frac{1}{10}$ mile

Cups travel $\frac{1}{3}$ distance
wind goes.

5748

15.2

9.21

20
0 678
0 59
0 188

0521-
-3821

19069

-50 21-0671

July 31 to Aug. 6 - 1908
Tested anemometers & packers

Aug. 7 -

Went to Burlington, looked
over fields for meteorological
station. (Atmos. ecology & locs.)

For timbered W. side will use
Crappo Park, - the natural
timbered slopes.

For east side, will use
sandy hills at Gladstone, Ia
(S. E. of town).

Aug. 8 - Packed & arranged notes,
etc.

Aug. 9, 1908.

left Iowa City at 5 a.m.
stopped at Des Moines,
with Mr. J. H. Lees went up
river on E. side to Pleasant
where excavating of bluffs
is going on.

law.

Wisconsin drift
ashen loess - brachio-
ferous zone - no other drift
sand stone.

Glac. (dark, black)

Must return to this. It
was so muddy (rain all
a.m.) that I could do
nothing.

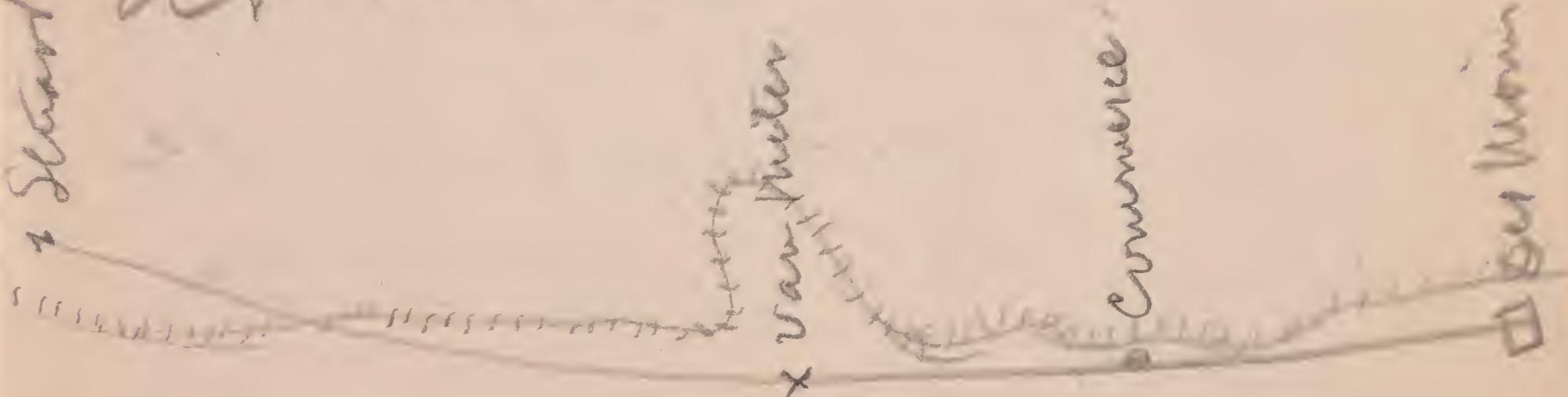
Left Des Moines at 11^{2/3} a.m.

35

From Des Moines to Van Meter
the Wisconsin moraine is
distinct, and just N. of the
C.R.I. & P. R.R., & of the river.
At De Soto we are into
rough country, - some rock.
Some distance W. of De Soto
the moraine crosses track &
follows south of R.R. to Dexter.
Northward there is a flat
plain, - Wisconsin.

At Stuart the moraine is
a little farther south from
R.R. - flat plain north.

At Menlo much the same



4

Just beyond Mendo we ran into rougher country & some cuts appear.

At Casey quite rough, some timber, & some, mostly overgrown, cuts.

Between Casey & Adair there is rough Kansan topography. Cuts show, but none or less overgrown.

Big cut W. of Adair shows yellow drift. Another cut shows drift almost to top.

Rolling Kansan to Atlanta & then to C. Bluff

Reaches C. Bluff at 4:15 P.M.
Left at 4:45 P.M. by C. & W.

for Miami Valley.

The bluffs E. of RR show brown (dead grass) or yellow

5

surface on W. & S. sides of slopes & ridges, but protected sides seem to be quite green.

The bottomlands are nearly dry -

Reached Miami Valley at 5:40 P.M. & put up at the Miller Hotel

Aug. 10 - (mon)

Spent early forenoon in arranging notes and material.

6 Mr. J. S. Wattles, C. E.

city engineer of
no valley.

Blair bridge bed rock is
45 to 50 feet below low
water, dips to W. about
5 ft. (in river bed)

Solid limestone, hard gray
wells for city.

Drive wells - 6 wells - 2^{1/2} pipe
60 & 85 ft.

Clogged soon.

Later put in Cork wells
(by hydraulie power) -

80 & 90 ft. - 4 wells

2 pumps - compound duplex

1 - capacity 1,500,000 gal.

2 - " 750,000 "

The RR. wells (4) are about
90 ft. deep. Struck rock

Analysis of water; C. & A. W. Chevins
Yes. Mr. Davidson Chicago
chemist C. & W.
RR. tanks

	old well	Cork	water works	lake	Wells
Iron waters contain of solid material					
Grains as follows:	33.68	31.12	26.61	7.78	
2 lbs. equals 8: (grains per gallon)					
Carb. of lime	17.50	16.35	14.54	4.46	
" " magn.	10.17	5.69	9.24	2.20	
Sulphate of lime	Trace	—	trace	0.30	
A	" magn.	27.67	3.78	23.78	6.96
oxide of iron & aluminum	Trace	0.15	trace	0.02	
Silica	1.26	1.31	1.64	0.30	
B	Alkali chlorides	1.30	1.63	0.86	0.22
Alkali sulfates	3.45	1.32	0.33	0.28	

A = incrusting solids

B = non " "

Pounds incrusting solids per. gal. RR. 4.13
" " " " " (Cork) RR. 3.90

" " " " " (water works) 3.63
" " " " " (Lake Michigan) 1.04

66
80

Comparative hardness
of water from:

Long Pine Cr., Neb. 3° of hardness

Wells at Mo. Valley - 25° - 35° "

Waterworks - " 11° - "

Not made at High School
lab., Mo. Valley, Ia

by E. N. Coleman

Surf's

Decem. 1892.

About 20 yrs ago, at
brewery, an Omaha
co. dug for coal
as foot of bluffs in Mo.

Valley. Tradition has it
that they panned through
6 feet of good coal ("like
Des Moines valley coal").

9 64

In afternoon walked out
to ridge above Schneider's
Hollow (beyond city limits)
and selected localities for
evaporation, etc., observation.
Took barometric readings, and
checked back on them, - the
difference in the return being
less than 5 ft.

W. side Miller Hotel (about =
C. & Mo. depot) = - 0,
Top of reservoir hill - 195+

I went N. on 5th st., from
hotel, and near top of ridge
followed road N. and west.

In evening met
Kirkwood, who is back on
a visit. Lives at Long
Pine, Neb.

180 Aug. 11-1908. (div. ^{the 13th} _{rainy})

Pans 5 6 7 8 9 10 11

12 1 2 3 4 5 6 7

63

11

1

2

3

4

Piche

1

2

Cup.

1

2

12 Aug. 11, 1908 (Tuesday)

Got up at 4 o'clock, expecting to make evaporation observations. It was raining, and rained all day, so that I could not get out.

Wrote abundantly, copied old Harrison Co. notes, made blanks for observation records, looked up plants, etc., etc. A busy, indoor, day.

In evening wrote letters, etc.

12 Aug. 12, 1908 (Wednesday)

Left at 8:25 A.M. for Logan, as it was rainy. Spent day until 5:30 P.M. at co. auditor's office making maps. Walked up the coast road, past Erickson to cemetery.

The cemetery is located N. of town (not far from RR.) on a ridge which slopes eastward to RR. right of way. This slope is covered with a typical prairie flora. Collected most of the plants, but recorded following, some of which are not in set, - they were few and all: (I do not probably have these). (I do not probably have these).

<i>Verbena stricta</i>	<i>Amorpha canescens</i>
<i>Vernonia novae-angliae</i>	<i>Eupatorium</i>
<i>Canis chrysanthus</i>	<i>cordata</i>
<i>Rhus glabra</i>	<i>Rudbeckia ampliata</i>
<i>Kuhnia eupatoria</i>	<i>ligulata</i>
<i>Lespedeza capitata</i>	<i>Halimocnemis grisebachii</i>
<i>Petalostem conditum</i>	<i>Monarda verticillata</i>
<i>etc.</i>	<i>Verbena hastata</i>
<i>etc.</i>	<i>Delphinium nelsonii</i>
<i>Bontelia ramosa</i>	<i>etc. etc.</i>
<i>Equisetum hyemale</i>	<i>(See plants.)</i>
<i>Asclepias syriaca</i>	
<i>Cannabis sativa</i>	

along the Boyer, on low bottom
I found some herbs (see her.)
and the following native trees:

Salix amygdaloides - *symmocraea* dry
" *nummularia* *Ulmus americana*
" *fluvialis* *Salix nigra*

Cottonwood

Green ash.

Box Elder.

also found saw. box.

On the streets, along roads, etc.
I found the following weeds (see
also specimen of some):

<i>Datura metel</i> <i>not com.</i>	<i>abutilon</i> <i>arvense</i> <i>not com.</i>
<i>Bromus nigra</i> <i>com.</i>	<i>Xanthium</i> <i>purple</i> <i>not com.</i>
✓ <i>Lactuca scandens</i> <i>com.</i>	<i>Melilotus alba</i> <i>not com.</i>
<i>Panicum capillare</i> <i>com.</i>	<i>Marrubium vulgare</i> <i>frequent</i>
✓ <i>Chenopodium hybridum</i> <i>com.</i>	<i>Asclepias syriaca</i> <i>frequent</i>
" <i>album</i> <i>not com.</i>	<i>Trifolium pratense</i> <i>com.</i>
✓ <i>Cannabis sativa</i> <i>com.</i>	<i>Setaria viridis</i> <i>com.</i>
✓ <i>Amomum trifoliate</i> <i>com.</i>	<i>Hedge mustard</i> <i>com.</i>
✓ <i>Iva xanthifolia</i> <i>com.</i>	<i>Sonchus</i> <i>(round head)</i> <i>frequent</i>
✓ <i>Polygon aviculare</i> <i>com.</i>	<i>Plantago major</i> <i>com.</i>
✓ " <i>(large)</i> <i>com.</i>	<i>Amomum retroflexum</i> <i>com.</i>
" <i>pennsylvanicum</i> <i>com.</i>	" <i>blitoides</i> <i>not com.</i>
<i>Leptilon condense</i> <i>com.</i>	<i>Dandelion</i> <i>com.</i>
<i>Amomum arctifolium</i> <i>com.</i>	<i>Poa pratense</i> <i>com.</i>
<i>Lepidium virginicum</i> <i>com.</i>	<i>Polygonum</i> <i>(large)</i> <i>com.</i>

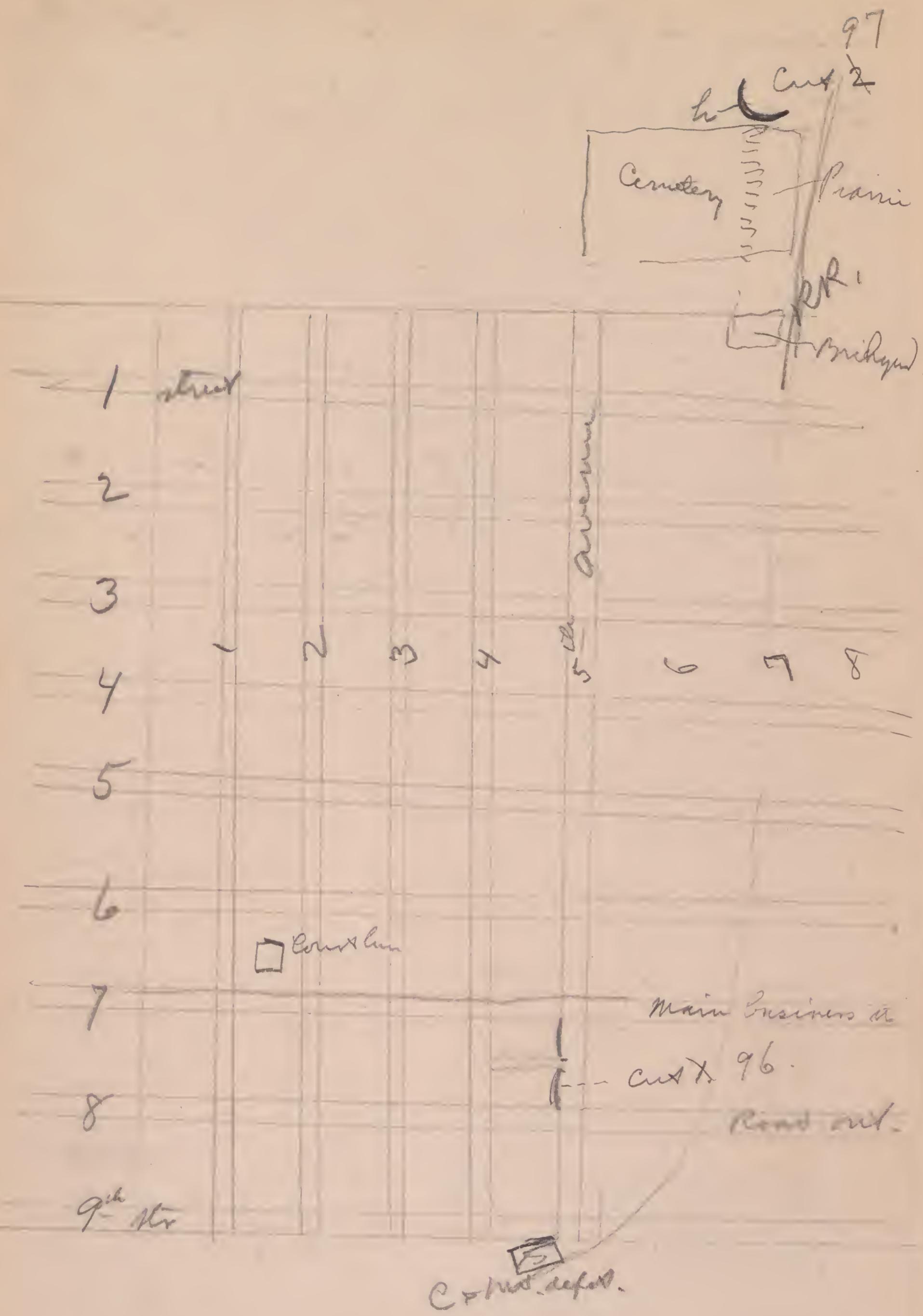
Panicum (*slender awns*) *com.*
" *capillare* *not com.*
Trifolium arvense *U. com.*
Rebula caliginosa *com.*
Hordeum pubescens *com.*
Ceratodon purpureus *not com.*
Euphorbia (*medicinal?*) *com.*
Rumex crispus (*not com.*)
Salsola tragus (*not com.*)
Chionus lanceolata (*var.*)

Also noticed the following cultivated
trees on streets & lawns:

Scotch Pine few	Larch <i>not</i> <i>one</i>
Box Elder <i>U. com.</i>	Ginkgo <i>one</i>
Am. Elm <i>com.</i>	
Green ash <i>com.</i>	
Chestnut <i>frequent</i>	
Peach <i>some</i>	
Norway Spruce <i>a few</i>	
W. Ash <i>one</i>	
Red Cedar <i>com.</i>	
Soft Maple <i>U. com.</i>	
Plum <i>not</i> <i>one</i>	
Apple <i>not</i> <i>one</i>	
Black Cherry <i>one</i>	
Hard Maple (<i>few</i>)	
Arbutus <i>one</i>	

18/14

17/69



Going N. from depot, up a good size ⁹⁷ hill, about $\frac{1}{2}$ way up, I found cut X,

96

east. slope.

at room.

sample.

This shows yellow loess, more or less reddish, loose & soft, with a few nodules, and quite a number of shells (see spec.).

Took a sample at x, where bank is about 7 ft. high, & x is about $3\frac{1}{2}$ ft. below surface.

Cut ⁹⁷ 2 is just N.E. of west part of cemetery, or N. of prairie slope, and is a curved bank of irregular height, made by excavation of clay for brick.

(This year they are making cement brick & blocks, & have not burned brick.)

The loess in cut ⁹⁷ 2 is brownish,

soft, friable, with few small nodules, and some fossils (see 44).

Took sample 8 ft. below surface toward S.E. end.

Fossils are mostly from W.W. end, but others all along.

The bank is highed at h., + is here about 15 ft. high.

Aug. 13 (Thurs.)

19

Went out at 4:30 A.M. and set up pans, etc.

I. Evaporating pan no. 1, Piche no. 1, ~~the~~, windmill ammonia and cup evaporimeter no. 1. are on the bare slope facing west, and are about 60⁵⁵ feet below top of narrow hill. Or ^{140 ft.} above depot. This is area 1 in my plant notes, see p. 31.

II. Evaporating pan 2, Piche 2, and cup evaporimeter 2, are set up just over the ridge east, at same height, in scant timber, but well sheltered. See p. 31.

The N.W. wind of today blows in ^{I + II are reported} here some (see next) ^{by "blunder strip"} about 2 rods wide.

This is area 2 in my plant notes.

III. On a point jutting out west, + lying S.W. of area 1, set up evaporating pan, no. 3. This is about 170 ft. above depot, + faces south + west.

20

IV- Just over the ridge E, and in a field which was formerly timbered, set up evaporation pan no. 4 at same altitude as no. 3. (This is the "old 4." At next reading I moved this to a point at same elevation in thicker orchard (few small trees, - my pan in open) (Seep.

Wind became strong enough to turn ²¹
cup anemometer at 9:45 AM,
but it was in gusts, by fits & starts.

from	
	1042
	1040
no. 3	1018
	1035
	1032
no. 4	1018
	1020
mean	1024
	1030
at 1	1007

There was quite a heavy dew in the morning.

It should be remembered that day before yesterday it rained all day, & that yesterday morning it was too wet to go to the field!

22 Photo 1- (sketch)

" 2- looking S. at area 1-26
numerous

" 3- same

" 4- looking N. from pt. to
area 1-26

area 1-26
area 1-26

area 1-26

" 5- same

" 6- looking NW. from
area point, across
valley, - in up valley.

" 7- looking NW. into 1-26

" 8- looking NW. from
area point, across
valley, - in up valley.

" 9- looking NW. into 1-26

" 10- looking NW. from
area point, across
valley, - in up valley.

Aug. 13.

23 Wind

1- 12³⁸ - 12⁵³ 3270 - 5000 - ?

2- 12³⁸ - 12⁵³ - 640 ft. "

2- 12⁵⁴ - 12⁵⁹ - 428 ft. "

1- 10²⁴ - 10²⁷ - 815 ft. "

3- 2⁰⁵ - 2¹⁰ - 2036 ft - from west.

4- 1⁵⁵. 2⁰ - 462 ft - from N.E. down
hollow.

Took one reading with Graw's
Psychrometer at each of 4 points.

{ no. 1 - 83 71 at 2 PM
" 2 - 81 71
" 3 - 84 71
" 4 - 83¹ 71.
on top of ridge W. of D⁴⁵. 71.

✓ Windmill at noon.
67.6, 2 miles.

Plants in area 1.

Area no. 2

Amsterdam 18. Oct.

26
at 5 pm. value of wind

no. 2. 445-453 - 190 ft

Wind can blow N. up the hill
no. 1. 456-501 - 970 ft

It is very hot, as the wind is
almost 10, the sun not been
out bright at any time.

At 5 pm. took green psychrometer.

reading at:

	sun	wind
1	84 $\frac{1}{2}$	73
2	79	71
3	84 $\frac{1}{2}$	73 $\frac{1}{2}$
4	81	71

Practically no wind.

at 6 pm. 81-71

At 7:30 pm. Green

1	72	69
2	73	69
3	75	68 - E. wind
4	75	68 - E. wind

27
The day was warmer, hazy,
especially afternoon and early
in the morning. There was
little wind, and that came
mainly by fits, - first from
NW, - then west. ^{Snyder's Hollow} brought some.
It died down in latter
part of afternoon, & during
middle of P.M. the plants
at the west border of area (2)
were wilted & drooping.

The woods are becoming (in
area 2) bare no leaf
mulch & few small
plants. (Has this been
pastured recently? - i.e., -
in recent years?
At about 7:45 pm. an
East wind starts up, &
effect on psychrometer was
noticeable.

28

Although not much wind
I could see some clouds
of dust in the Blair
Sandstone territory.

Some flint chip, pebbles,
& fragments of clams
on top of ridge. I
could also make out at
least one morn. (See
plot.)

Readings of psychrometer taken
nearly about 1 ft. - or less.
Piche - were about 8 in.
cups - burns to Cork.

Pans on level of surface -
burning.

Pan 4 was probably a little fuller,
on account of wrong mark, perhaps
40 cc. should be added to reading
at first reading of cup evap. I
found what appeared to be slight
leak - hence large reading. I stopped
it for next setting.

Aug. 14 - Friday.

29

Went out at 5:45 a.m. was
cloudy, with wind from E., &
at first with occasional raindrops,
at 7:15 commenced rain hard,
got a good soaking on my
way back to hotel. There was no dew.

The specially noteworthy facts
to be taken in connection with
observations are as follows:

Pan 4 was quite exposed to the
damp E. winds, which evidently
blew all night.

Pan 3, though on west side, was
as situated on the S. side of a
projecting ridge that it caught
the wind much stronger than any
other pan.

No 1 green reading was taken dry,
but it had commenced to
spinkle before 2, 3, & 4 were taken.
I never used dry alcohol psych. as
it was getting too much like rain.
all observations taken 4 to $1\frac{1}{2}$ ft
above surface (except pans), & cup

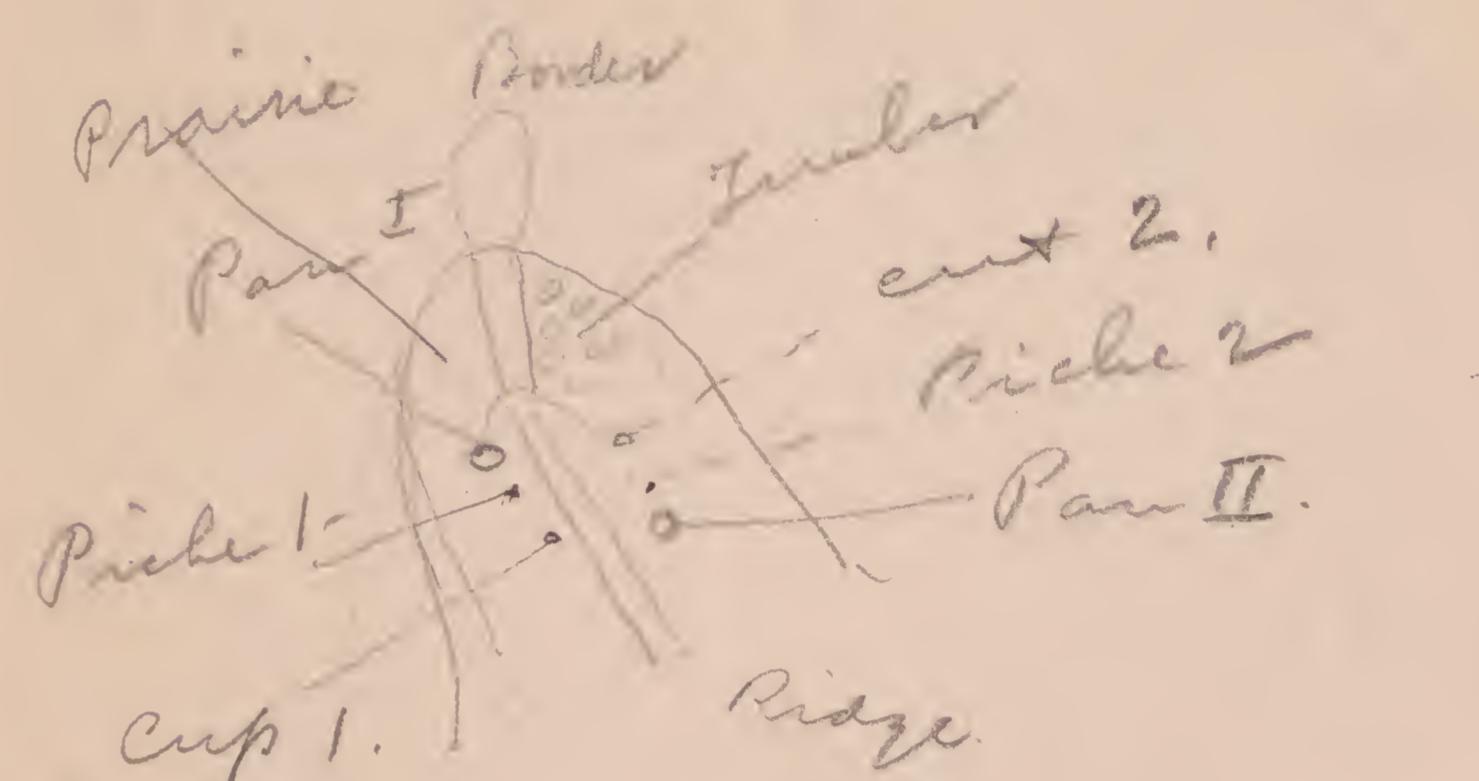
30 and Pickle which were less than 1 ft.
On the way up I took following
barometric readings:

walk in front of Miller Hotel -	0.
so north on 5th Street at foot of hill.	12(15)
Superior st (12 elev.)	55
E. Michigan (2 nd fl.)	90
W. Clair st.	175 ¹²⁰
Linn? (a little S. of street) (about 2 blocks.)	190
1 blk. west -	175 ¹⁸⁰
1 " north -	185 ¹⁹⁰
1 " N. west - (top of rise)	195
1 " N. = end of st.	

I also located instruments:

No. 1 Pickle is 7 ft. 5 of prairies +
on same "cat-steps". No. 1.
cup evaporation is 10 ft. 10 in
further S., - the line of
instruments showing a little
to southeast.

No. 2 Pickle is 6 ft. 8 in. W. ³¹
of prairies. Cup 2 is 10 ft.
4 in. W. of prairies II



It is 20 ft. (around on curve at
level) to w. edge of border.
The border (mixed prairie +
forest) is about 25 ft. wide.
Prairie II is back E., 48 ft.
from E. side of border area.
This is all on a hill.
Really the ridge between ^{Prairie I +}
II is scarcely elevated above
Prairie II, but latter is
"around the corner."

Rainer and I got a good wetting.
Went to Logan and worked at
Court House. In evening went out
to old quarry, and noted additional
trees on flat: Sycamore, Black willow,
Am. elm. Returns to Mo. Valley
at 10³¹ P.M.

Visited Smith's Brickyard lot, &
found two locos - Reassembled for
fuller examination.
Saw nice lot of Prairie plants.
Get later.

Interview Mr. A.H. Griff, editor of
the Daily News.

Aug. 15 - (Saturday)

Rained in morning. Praire plants
& wrote.

In afternoon went on hill. Again
took Committee readings

Walk at Miller Hotel (= crew depot) 0

2nd week north - (foot of hill) 15

Superior str. (1st drift) 55

(2nd ") 90

(3rd ") 118

at 1st thin W - 145

" " n - 175

" " W (sw) - 185

" " n. 168

" " nw. 178

at thin W 2nd drift 150

total - 15 - 10

1. (1st drift)

2. (2nd drift)

3. (3rd drift)

4. (4th drift)

5. (5th drift)

Sunday, Aug 16.

Rained a little. Packed plants, wrote letters, & at 11³⁰ left for Omaha. (Brought handful of plants.) Went to Brush's, - from Vada has gone to Chicago.

In the afternoon went out with Lamm & station a $\frac{1}{4}$ of a mile above water and at Horner, & fixed station on ridge, 100 ft. (barom.) above road, & at edge of clearing, - only scantly shaded by border trees.

This is at Mr. bungalow. He is a member of library board with Frank Babb. At first object & intruder, but in learning spirit of visit, was very kind.

The bluff here faces a little S. E. & is heavily wood'd, but there is a clearing near top, & at N.E. corner of this I set up cup & pipe evaporimeter.

Very hot.

Hurries to Fairmont Park, &
above (se) of 10th Ave, entrance,
at 100 ft. alt. I set up
instruments (Bulb & Cup aner.),
& took readings, (see sheet).

Returns to Bushells in
evening.

Monday, Aug. 17,

It was stormy & threatening
all night, but no rain.
Night was very sultry, but
tomorrow morning as good
as no. wind not in. At
11th Ave
midnight it was cloudy, &
remained so until morning.

(Took readings, see sheet)
I changed the station to the
same level on next ridge
north, opposite middle between
8th & 9th aves. This projects
out more, & is the best expos.

point in easy rock.

37

I notice that instruments set
up last night were under a
little bank, - hence, cut off
from northly wind.

Evaporation was slight. There
was very little dew, - almost
none, except in lower places.

My new station is on top of
ridge, exposed & with wind sun.
It is 140 ft. above flat, but
100 ft. above shelf on which
are trees, residence, etc.
Moreover, this being farther
down stream should be a
little higher.

The new station is 70 ft. high,
at top ridge of which the no. 1
main station is a open.

The 3rd station is just over the
ridge (end) 2 rods from top, and 6 ft.
below it. Scant timber here.

The 4th station is at top of main ridge
at angle of road in NW. cor. of the park
& is 25 ft. above no. 3, or 205 ft. above
flat.

hedges - W. side (top) of Fairmont

Park Bluff.

Delphinium nelsonii
Amelanchier canescens
Petalostemum canescens
 " violaceum
Camassia esculenta
Dalibarda (beauchey)
Ceanothus -
Liatris squamiflora
 (spotted?)
Lycopodium juninense
Andropogon furcatus
*Gramineae (shrub - see
 No. Valley)*
Elymus (big one)
Malibotis alba
Collomia (spotted)
Bouteloua gracilis
Galium boreale
Aster (purple blue)
 " *longipetala*
 " *multiflora*
Salix humilis
Quercus macrocarpa
Pinus strobus
Comandra umbellata
Verbena stricta
Eriogonum canescens
Aster sericeus

Solidago - mostly see
 " rough (in valley)
Astragalus (gray, hairy)
 " smooth -
 (carocarp?)
Castilleja pallida
Epilobium marginale
 " " (yellow)
 " " (pink in valley)
Panicum capillare
Setaria viridis
Oryzopsis -
Amelanchier -
Veronica spicata
Asclepias speciosa
Rubus spectabilis
Rosa - (in valley)
Coprosma (yellow)
Anemone lyallii
Malumbrosia pallida
Dennstaedtia canescens
Lycopodium complanatum
Chrysopsis -
 add *Gaura*
Agastache (yellow)

40. Readings at pts. indicated -		in Dairymen's Bush - Green's Ranch.	
at 20 ft. 5 ft. 3 ft. 4 ft. 6 ft. over ridge		in woods 2 rods E. 100 ft. E. 20 ft. lower than top ridge	
10 ft. above station	above station	10 ft. above station	8. + 10 ft. above
dry wet	dry wet	dry wet	dry wet
8. 10. 71 62	74 64	70 61	69 1/2 61 1/2
9. 71 62	72 62		
10. 78 67	76 64	73 67	windy
little wind	quite		windy
11. 80 66	80 65	78 64	76 63
at 12. 20		windy	windy
12. 81 66	81 66	76 66	74 66
{ 6 ft. below top of	(78 66)	(at 12. 20 - 67)	78 66
Can. river (in 4 ft. of snow) among snowdrifts			
1. 82 68	82 66	78 63	windy
no wind		76 61	80. 67.
2. 82 66	85 70	78 63.	76 62
calm	windy	calm	82. 67
3. 79 66	77 66	76. 64	75 62
			76 65
4. 76 65	77 68	76 64	74 64
calm	windy	calm	78 67
5. 76. 66	79 67	75 64	74 64
calm	windy	calm	78 67
6. 77 68	75 64	74 64	74 63
			75 1/2 64
7. 70 62	70 62	71 62	71 1/2 62
			71 62

at 10^{ft} - 10^{ft} - rel. from c 1180 ft.

at station 6 ft. below top, E. of ridge

in woods -

at 12^{ft} - 6^{ft} - 1850 same station

at lower station (in woods) 1665 - 12^{ft} - 12^{ft}

Very top of ridge above river, 41
wind west, was 77-67 + 1.30

Str. at foot of cliff
1. below 4. 7
2. above 8
3. rain +

8^{ft} 60

42

at 12³⁰ (when it was down,) I held my glass in hand.

It was 78-63

I then turned & took page in sketch of my body & at one wet back went to 65.

78-65 was noted at station 5 - velocity

$$2^{22} - 227 = 510 \text{ ft.}$$

Body mostly leave.

✓ Photo 9 - looking N. over ravine - Conine Bluff

✓ Photo 10 - Looking S. into Fairmount Park, both interior timber views

✓ Photo 11 - looking S. from main station.

✓ Photo 12 - looking N. of S. at sunray pocket.

Aug. 17, 1908

43

✓ Photo 13 & 14

Cut at end of station ridge on 9th Ave.

String bank of loose material

✓ Photo 15 & 16 -

End of N. cut -



✓ 12 & 16

New view of ravine at X

Not wind enough 18
more the teams at
no. 3, also 2, though
 latter gets better gusts

In the cut just below my
 station the base of nodules is
 very prominent & follows somewhat
 the vertical contour, dipping
 down west.

Above this, near top of cut, is
 the very distinct shell band,
 which is also exposed along
 the side of the ridge. Shells
 are exceedingly abundant. (see box)

The nodules layer contains the
 largest nodules that I have seen.
 Spent night at Ponca's.

Aug. 18, Tuesday.

Left Council Bluff at 7.⁵⁰
 am, for Niobrara Valley.

46
This was by Claude Cox.
Pit on N. side.

Just across road (about 300
yds S. of pit.) is line
where well shows.

40. { Black soil 2 or 3 ft.
Blue jones clay

{ Sand and (water) a little
87 { Sand
{ Gravel

Total depth 87.
water in gravel.

The bones are all in gravel.
also from bottom of road
in same gravel.

The well is
55 ft. above
the drift on which town
was built.

This is a farm of P. R. Cox,
father of Claude Cox.

Pit (McGraw) - S. of 47
McGraw is 22 ft.
above bottom (R.R. is 6 ft.
above bottom.)

Pit shows sand & gravel
mostly sand, with little
in lower & below



Copper above with clay.
lime stuff goes in 6x feet
no lime.

cut 18 ft. higher,

44 Aug. 19, Wed.

In Auto. parked and looked up notes.

In afternoon took barometric readings on the east ridge and E. side of middle ridge. They checked perfectly.

On the return, and I let them stand. Also checked with other readings on 5th st. See map of town for these.

I used the wall in front of the Miller Motel as a datum line.

This is really same as C. & New. depot.

I also located east ridge and east line of middle ridge. The unusual number of cuts in Mo. Valley makes this a fine bird.

Thurs.

~~Aug.~~ Aug. 20

49

went S.E. with Lannie Brush. Stopped at gravel pit (cox) & got a piece of clam & bone.

Visited the ^{lake} Dickl' pit just S. of road, but found it slumped. Report has it that many bones were also found here.

Cut 67 is a low cut (with gutter only 4-6 ft. high, & below upper 2-4 ft. (which is gravel, but with iron tubes & certain fine limon materials) the loam is more compact, bluish, with iron streaks & with few nodules & a few very fragile shells. Recognize *Helicin* *variolosa* & fragments of *Succinea*. (see box)

Took a few nodules, & samples of clay about 5 ft. from top.

No. 68 is a minia exposure with small fragments of shells, but is a little yellower.

It is not over 6 ft. deep & rather clay, a lot more of iron.

There was here gradually, ~~now~~
up slope, cut 68, higher
than 67.

Cut 69 is on hill sloping up S.E.

a) - now 3-5 feet, which is
yellow, crumbly, & with many
little nodules. And a few
have green, etc. (see Spec.)
also sample & nodules.

Sample 3 ft. from top
b) to now body of box. It is
chiefly yellow, but in places is
bluish with iron streaks &
charcoal brown spots.

It has fine, scattered, only
through & over a limited
number of rounded nodules.

See shell, nodules & sample.
Sample 6 ft. from top, but
where fossils are most
abundant.

The total depth of cut is
about 14 ft. & nearly
three telephone booths long.

Cut 70 - is similar, but only
about 6 ft. deep, no shell.

51
Cut 71 is in hillside at corner
(nw.) about 8 ft. of compact
box with no streaks & brown
(like samples from cut 69b)
is exposed in a bank & road on
on W. side of road.

In hill gather on W. side
a blue box with white sandy
tubes & red sand tubes in
exposure (see sample 71 b)
a little cut (not deep but long)
leading up first hill E. then
blue box & tubes at foot of hill,
on it is soil at foot & then
nodules. Top layer of box also.

I could not make out box
here, but 69 b seems to
be a transition layer, as
it is upper member of first
formation.

no. 72 is at foot of hill (its E. end)
where about 6 ft of yellow
loess & the = of 6 ft a. contain
a more compact blue loess,
with a dark chocolate vein
band, interrupted & irregular
& only an inch or so thick

no. 73 is a deep road cut,
15 ft. deep, being cut
across a narrow ridge.
The lower mass of loess is
bluish gray, with few nodules
& some bones scattered all
through. (see sample 73 b)
It is brown, light, with chocolate
spots & a few iron streaks -
inclined to a yellowish &
is not typical blue loess.

The upper layer of 3-5 ft
is crumbly, reddish, & shades
into 73 b. Few small

nodules appear in upper part.
no. 74 is near foot of hill just
E. of 73 & is a washout N. of
road about 12 ft. deep.
It shows in lower half a
very compact loess (see sample
74) & this is streaked with
iron & chocolate.

This is Brothers

On north -
(In no. 20 at Magnolia
dry well black ml.
20 yellow clay.
40 blue clay
10 ft. sandy - & dark
blue clay -
well 70 ft. dry
at 40 ft. a reap. & then
dry to 70 ft. -

a little farther N. about 200
yds N - on west ridge
2- ft. black ml 30 ft
20 - blue clay - more below &
- Hardpan - same

54 In boulders as big
as your head. Black
mica-schist & some red ones.

Looking E. from Beebe town
I come on rolling plain,
not so rough east of Potato
creek, & we come back probably
9 or 10 miles or more.

It is more gently rolling
Kansan plain, evidently
all loess covered.
Between Beebe & E. side
of Potato creek the terrain is
broken.

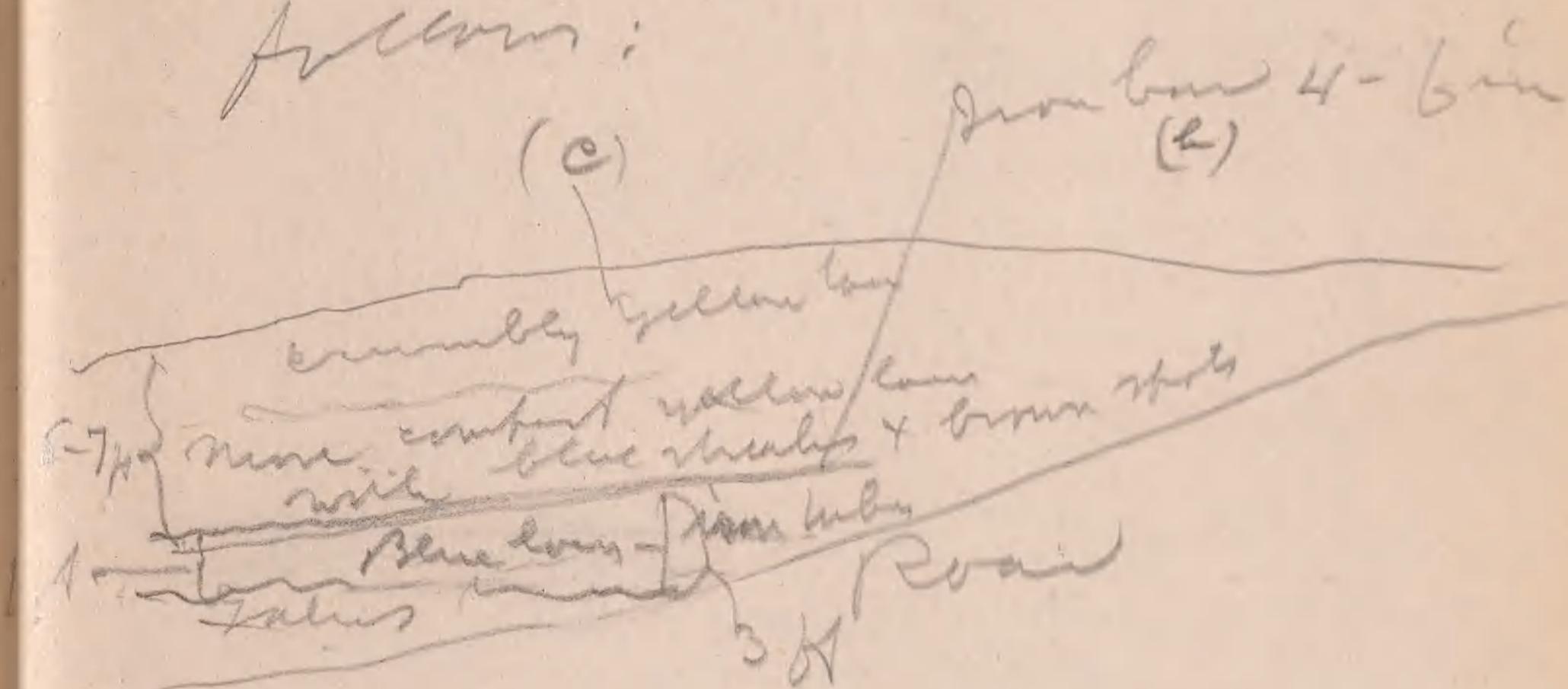
S.W. part of county is rough-
rolling Kansan rises up to
the bluff country.

The Potato creek valley
makes a little break, but
it is not a broad valley.
Has very little timber.

55 Shifting is in tufts,
just E. of Beebe town on N. side
of road is a little catalpa
grove.

At 75 Blue loess with numerous
tubules shown in cut made
at entrance to farmyard.

Cut 76 is near base of little slope
& extends to top of little ridge N.
at base of slope it is as
follows:



The blue loess ^(a) is compact,
with white calcareous patches &
small nodules.

The upper loess is also compact
but is of mottled yellow & gray
type seen in 73. (See samples

56
At 77 the road cuts having
down great steep hill,
passes over a small bridge just
S. of creek, & then in road, on
down slope (toward N.) there is
a considerable amount of Keweenaw
dolomite exposed. (See pebbles.)

Cut 78 is on ⁿ slope, leading
down from top of first ridge
N. of creek.

It is 4-6 ft. deep &
the lower part is grayish
like cut 73, & upper
part crumbly yellow with
small dolomites, as before.
But finds from lower
part of crumbly layer &
part in which it blends with
lower layer. (See box.)

Cut 79

57
This is on top & N. slope of
first hill before town.
It reaches 7 ft. in depth &
is just like 78 - zones
are in lower part of upper &
other part of lower.
Lower has rounder nodules
as before. Larger, smaller ones
as before.

Cut 80 same same ridge

80
=
" 79
=

12 ft. deep - same as 73
Zonals from lower part.
Rounder nodules (below few)
Smaller one above (few).

Cut 81 - is on first with small slope E. of creek. It shows broken (one blue-black over 1.67) in drifts & plane, & smaller pieces, etc. of the Kansan b.
Just way up the slope a red ferruginous zone shows, & goes up into a reddish clay, ^{yellow} (over) all Kansan drifts. On top there is loess over all.

Cut 82 Shows blue loess with iron in streaks and bands in upper part, & yellow loess (a little) above
near this found living shells in wood.

Cut 83 - Shows blue loess b.
yellow above -
fragments of shells
concretion
down near creek.

Cut 84 on slope facing N. Like other - yellow, small nodules above, larger rounded nodules in lower more compact part

Cut 85 is on slope facing E., & marks top of hill.
Similar; but 4 ft deep saw few fragments of shells also took few from compact lower part on lower half of slope

The topography of vicinity S. & S.E. & E. of Mo. Valley is good Kansan.

S. E. of Mo. Valley is on high towns bluffs, and E. & NE. from Beebe town, where I come six or miles it is somewhat more gently rolling Kansan (a fine view for 8-10^{1/2} miles), broken by the rather narrow valleys of Potato creek, along the banks of which are bins & clumps of trees.

60 traces of snow up (now in transition
to clearing) seen in sec. 17, 24 & 25

7. 78. R. 44 S 17 R. 43

N. of Bublom in sec. 14, 11, 1, 2, &
the topography is very rough,
especially along Harris Grove creek
and there is considerable amount
of heavy timber. In places, especially
S-towm border, even with deep
woods are bare from underneath
& leafmould, - a peculiar condition
described also at sta. 1, Mo. Valley,
(see pp. 61 & 62)

There is however, characteristic
deeper woods near the creek.

Aug. 21- Friday. 61

The day was hazy & cloudy
with thin clouds so that a
slight shadow was thrown on
part of the time. Only occasionally
did the sun break out
at stations 2 & 4 the sun
was very little wind, with
puffs.

There was a rather heavy
dew in the morning.

The deeper woods are bare
like those on yesterday's
trip. A few small button
timber plants, looking like
redtop grass. I could
recognize among these:

{ *Erubolom agrestis*, subsp. 25
Chrysanthemum ssp?
Viola canina
Symphytum
Young sals., the
Amelanchier *griffithii*
Lathyrus -?

62 These bare woods run to
affter where the wind
enters.

The trees are then already
enclosed.

Add ~~bitter~~^{hairy} ~~hairs~~^{hairs} & trees.

I took photos of these
bare snow woods.

Nov. 19 & 20 & 26 & 27.

Each pair submits a
different view.

Aug. 22-1908 Sat. 63

Packed & am now in tent
at 2nd left for Creek
at Humboldt.

wind Northly & cold in
morning. (bitter up
abundance an. Temp.
53° F.)

Aug. 23 - Sunday

Rains all am. Cloudy
P.M.

Spoke at 3 pm the
young people.

Mr. Kotoni is a young
spirit. Young Bohemian
Krasny, the president, is OK.

Fr. Krasny gave me name of
John Kudrle ^{w. 4th} -
Jos. Vojich
1407 Center st.

64 Aug. 24. Monday

Spent day at Omaha.
Got my permit from US & BOR
to dig for Sioux Wears &
bark & colored stones and
a amount of worked shell
got plenty.

Drizzly rain most of the time.
Saw moving stones (carts) as thick as
I aced in 1 mi S & 1/2 mi E.
of Modale, that they were a
dangerous road.

Plots 23-24 - looking up
old river from bank
from bridge in S. end of
ac 24 -

Plots 25-26 looking up river
from far N. of Modale (in wet) ^{Mr. B. L. Hamblen B & M.}
bare 25 snap. 16 in.

Plots 27-28. 27 snap
strong small *Salix planifolia*
between 12 & 13 on N. side near as dry
below 30 ft. of loess.

Aug. 25 1908 Tuesday

Cloudy - S. wind.
Drove out to Modale, etc.
Plants on bottomland same
as those on dry hills.

✓ *Carica charuca*
✓ *Grindelia marginata*.
~~Brothia laevis~~
~~Archibasis violacea~~
~~spina~~
~~Peltostemon rotund~~
~~rhizoma~~
~~artemisia graphioides~~
~~Liatris ligulistylis~~
~~Stipa marginata~~
~~Verbesina stricta~~
~~andropogon furcatus~~

65

Trees on bottom
native

bigleaf magn.

elm and

Salix nigra

o. plumbilis

o. Elm

o. sugar

o. Poplar

o. Sycamore

o. Copper beech

o. Catalpa speciosa

o. Green ash

o. Amorph. frutic

o. Ulmus elata

o. Elm flat

o. Green

o. Sycamore

o. Poplar missouri

o. Sycamore

o. Elm burr

o. Katsuraia japonica

o. Carya laciniosa

o. Quercus coccinea

o. Sycamore

o. Virgin. coryne

o. Salix missouri

o. Populus tremuloides

over

o. Plots 29 & 30 - Holley Sents 67
cottonwood fruit

o. Plots 5-6 - Saw some corn
with Cassia char. & Cotton
very little Dalton

o. Plots 7-8 - Saw some & few

Aug. 26 - Wednesday

J. C. Prather - well-drained
strata with out little sand
3. A ton - 1 mi. - No sand
3 cuts - 135-137 ft. - Rock
very hard (not limy) ^{of no value}
about 2 miles N (Jewell)
well 192 ft. - nearly all
clay.

190 ft. down & trips

of wind's day to 210.

Upper w. 7' 1
in brick at 150-175

328 - Common - 144 F

Loose Brook Game Area

loop is
the iron - seem to be

work ~~was~~ about Barn in 1874

369 M

as far as
as far as about thousand of 69
coal

2 \equiv at 280

about 3 ft
soft soil,

144 ft
Sagam

No slate blue or
yellow just above.
But very blue shade
above, below. (Come in)

End of about 6 ft -

Saw about 3 inches -

1. love work

Several dogs with
a long & a short

about a M.-like

324 is new

the day a
few days

your
yester

70 Strata reddish layer (beds
at 140-150 ft.)

on N. end of Bayes the
is now below, but no sand.

Peter Cook's well at ground
level?

Upper clay - 70-72 ft
dry sand - 35 ft. before
water was reached.

4-5 of Beekman -

Handspan - 50-60 ft to
bottom, & then gravel.

Ints in tabular beds -

3 of valley - just tabular
going to Calf Creek E. side

on shelf -
west 596 ft

Stuck hammer at
35-40 ft back

blue -

W. about Calf Creek -
on shelf - 30 ft away
at 70 ft from the 40-50 ft
Red blue clay, Tonaw

a limestone & sand -

4 in thick -

2 mi NW of Logon

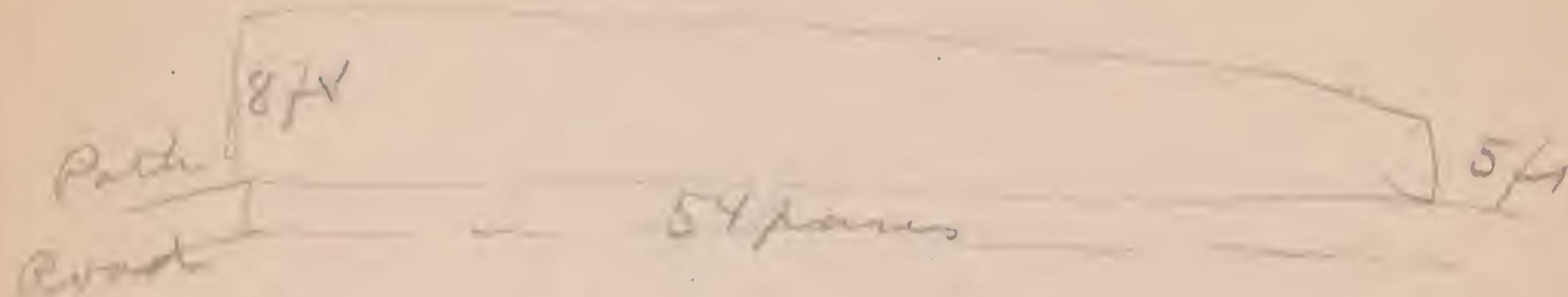
E. B. Vaughan's place -
about 200 ft -

No rock ledge -
Yellow clay 170 ft of the

71

72 Cut in Mr. Valley

cut 1



The upper 4-5 ft is crumbly yellow loam, with numerous small, irregular nodules.

With sample at 30 in.

The nodules are few and more rounded in the lower and compact layer.

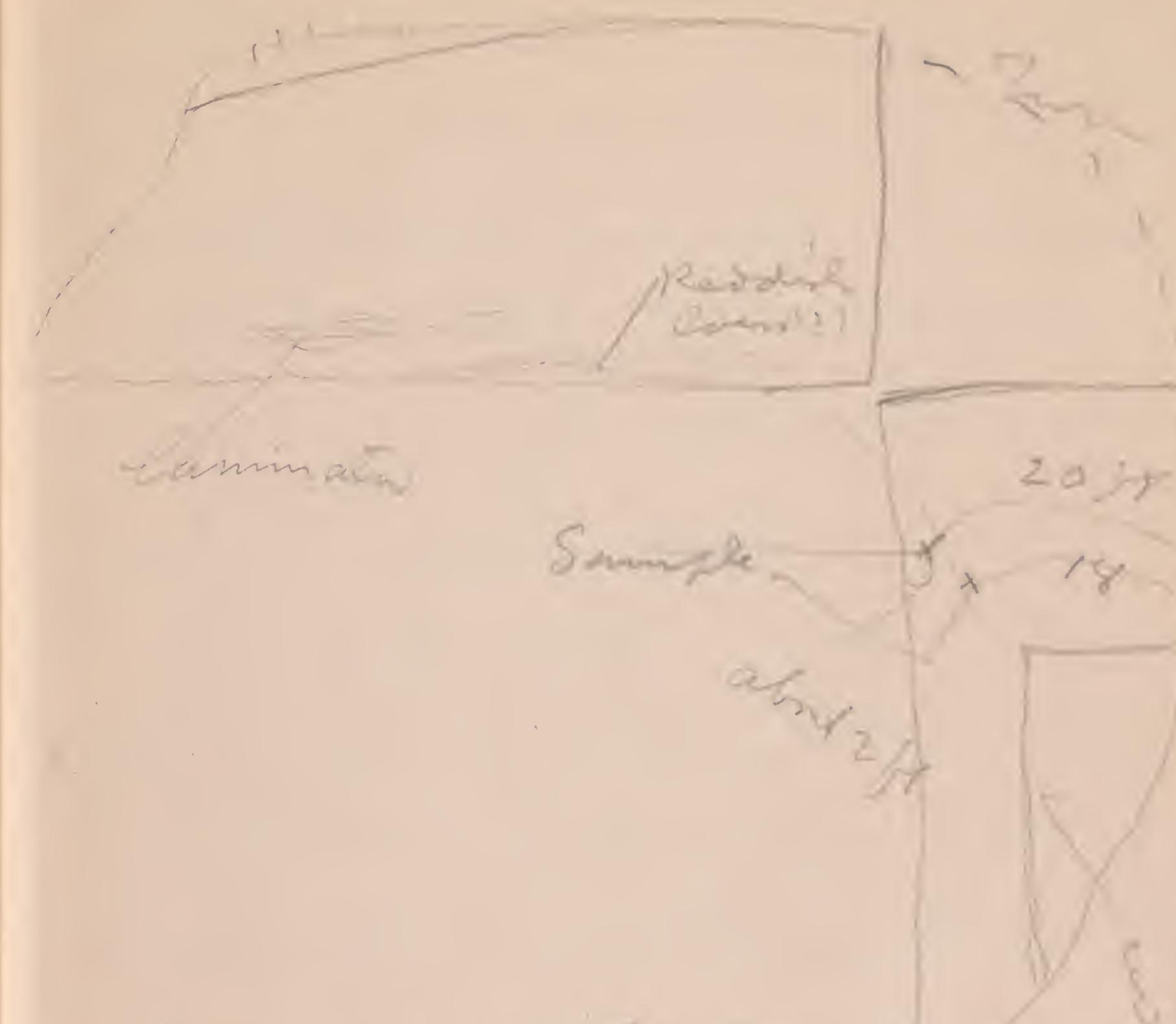
With sample at 6 ft.

Both parts frequently show thin & flakes of white fine carbonate.

Can only a few shells & these are probably overwash from Grindley slope above.

cut 2

73



For cut 2 lower part (20 ft thick) is a soft yellow loam with iron spots, a few horizontal iron streaks & cloddy, & it shows a distinct horizontal cleavage (sharpened).

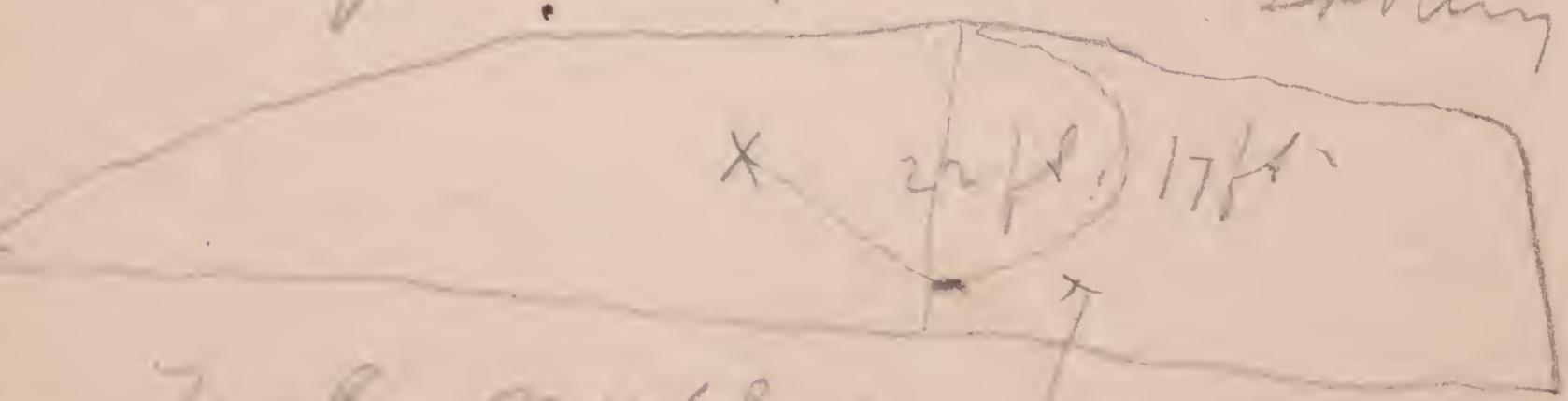
Nodules are practically absent from lower part - upper layers as in 1.

74

at 18 ft + up to near
surface (with dried & loose
peat and stumps)

This contains scattered Jones
beds compact than at 20'
On W. side with 2 or 3 ft
of loose loess become redder
with iron. It is distinctly
laminated (with iron streaks)
in part so marked, which is
between upper yellow &
lower redder loess. (Brownish)
See sample of reddish loess.
Is this redder only because wetter?
Compare when dry.

Cut 3 - over 2 ft long - about
22 ft deep. Looking S



Look sample in sample
20 ft. from top.

Jones sand 3 ft (thin) below 40 ft from
bottom of cut.

75
This is again yellow, finely
laminated in structure, with
very few iron streaks &
scattered forms, at x a
layer of broken shells - fragments, 5 in
long & $\frac{1}{2}$ wide. Made out only broken
Cut 4 ^{This is not much} 3 in. deep.
Looking N.

74 16 ft 10 ft

This is yellow loess, same as
in (3) & contains Jones &
a few nodules. Same deposit
of course.
Cuts 3 & 4 show little probably
nodular layer above.
Nodules in both 3 & 4 (as in
2) are either rounded or
cone-like, always sand.

In them & other nts. *Spirifer*
obliquus is often found near
top of section & is often only
faunal zone in that part.

76 Cut 5 - Park fair S

beds, n.



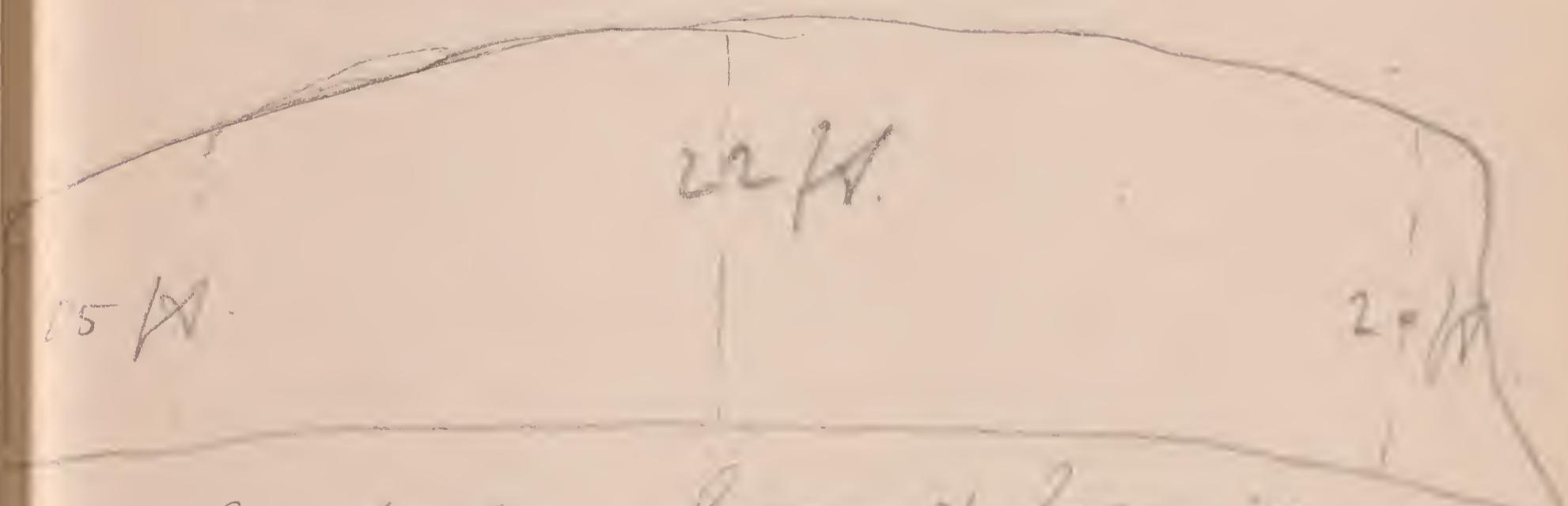
The lower nodules are
same as in cut 3
Fossils are mostly just out of rock
in highest part, & I have to get
them on the road cut & around
the town on E. side.

Fossils weather, & not numerous.

All that part of cut 5 in E. &
W. part (in lot) seems to be
same, & not so deep as cut 5
facing S. - about 15 ft probably
is highest of this part.

Cut 6 is on slope & 77
at deepest pt. probably
18 ft high. Gritten -
weather deep at base all
along & I could not work
much of it. Yellow con
as in 5, nodules, fossils few
in places, especially below,
if show distinct lamination
parallel to surface on
weathered surface.

Cut 7 - Block bay



Nodules, loess & fossils as
in 5 - mostly fossils
just out of rock, but
fossils few.

Cuts 7 & 8 have many
large shallow holes - in upper
1/3 or so -

cut 8

like cut 7 - about 20 ft
deep.
few fossils, & mostly above.
Moderately laminar, with
texture, as before.

all brown

22 ft. to A

4 ft.

Cut 9 is more
or less slumped, but shows
some features as 7 & 8, only
upper nodular layer is a
little more distinct.
brown, nodular, fossils rare.

The fossils
few bands & streaks appear in places (P.
Its upper end (n.) is brown
& more slumped.

for
House

14 ft.

bank

cut 10

This is about 10 ft deep &
mostly yellow brown.

1/2 black clay.

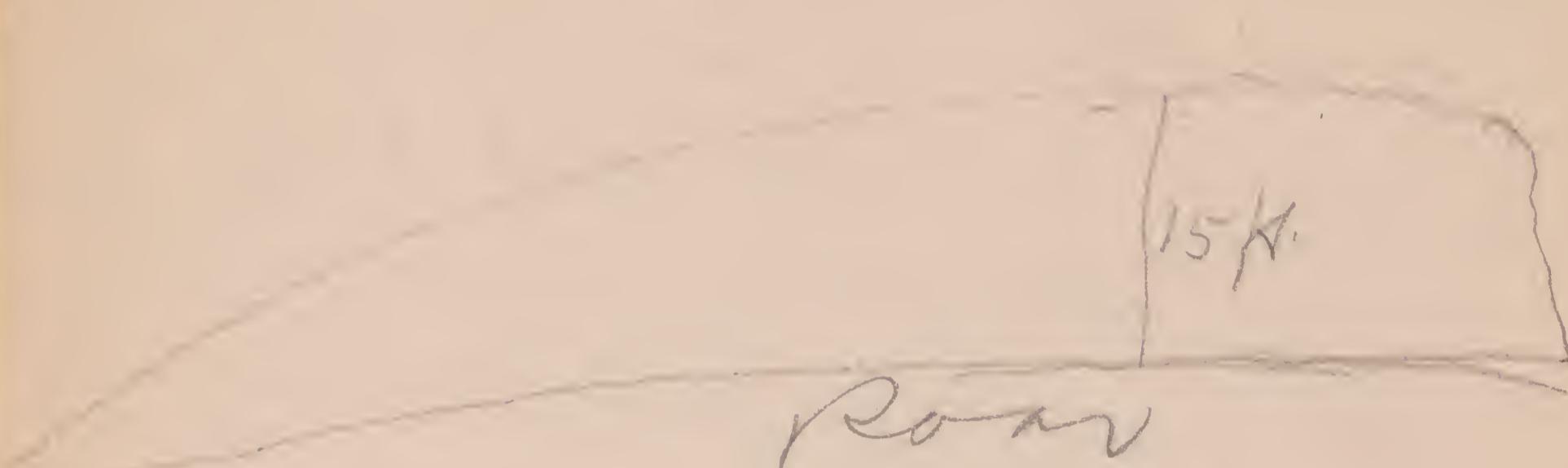
A few few small brown nodules
fossils

10 ft.

The nodules in this part, &
texture are same. So are
fossils. The nodular layer
runs out at W. as
brown. It is 4 or 5 ft deep
at W. as a thin out
in lower part turns e. & the
brown color reddish (red?)

Cut 11 is low (1 ft. 7
first terrace & 2 or 3 1/2)
& shows nodules like those
as in 10 - thin out
Orange brown & not dense.
bands with lighter
and brownish streaks but 3 ft. low & no

80 cut 12 is over a block
long, & takes down hill to a.



This is like layer of 7, 8, 9 1/2
contains some mollusks,
shells, etc. (over not
marked out a distinct
modular layer above, but
it is more or less tabular.
all over this old
weathered surface when
it became wet in the
sprinkles of today, the
red color appears. I
not in again & again
& from this red very

at surface Red 81
was yellow.

cut 13 - is over a low
hump, 5-7 ft high,
1/2 block long. Shows
fragments of shells, mussels,
lenses, etc. as in 11, 12, etc.

cut 14



The lenses, mussels, shells are
same as before.

The modular layer is
quite distinct & free
5 ft. deep. For 1/2 m. high
in it, mussels and very
numerous.

Lower layer will be
some mussels.

82

This is full of holes
occupied by Entomobrya form
(Come up & take picture)

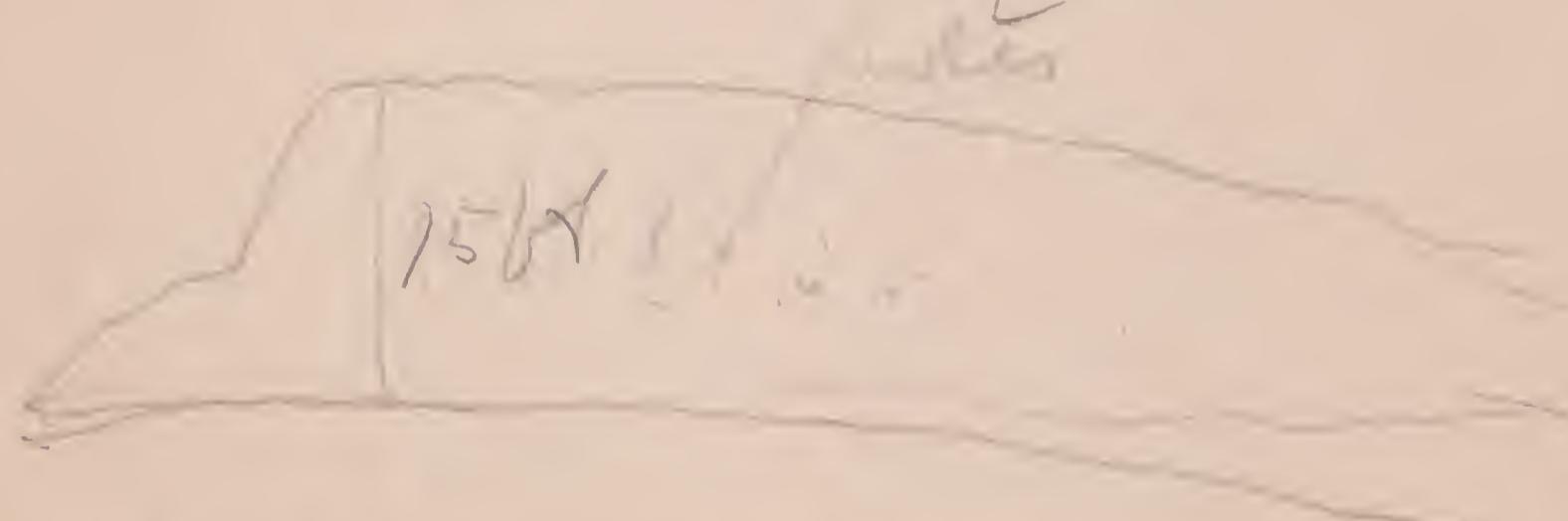
See shells.

cut 15-



Same as cut 14,
no shells.

cut 16 - 1/2 ft long



Upper modern form
3-4 ft, with few very
small nodules.

Remaining as in 15 & 19 83

cut 17 - about 20 ft long
more or less straight.
Modern form more prominent,
especially at W. end.
About 1/2 ft long.



Form indistinct in lower
part - 2 miles or less

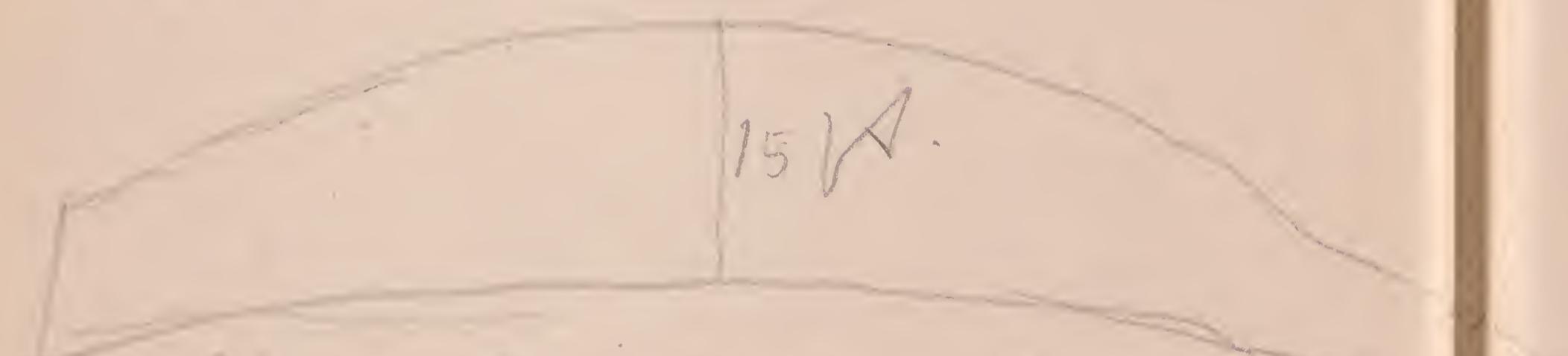
Cut 18 is similar.
Upper (moder) layer
not always distinct but
present, & in its place
a moder layer

See shells
sheet var.

Locality W.
2 blocks long



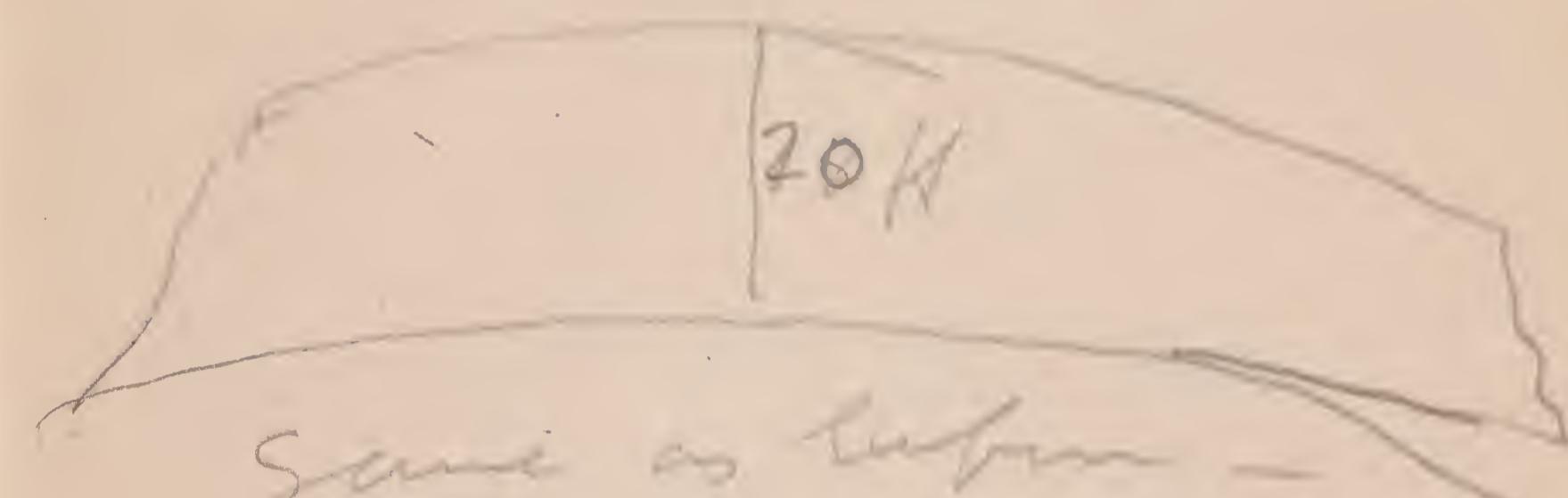
Cut 19



Moder layer low
pointed -

Cut same as before
shells very few

1/2 block long.



Same as before -
moder layer broad,
but moderate few & small.
Road surface more
moder below - also
some fibrous.
Locality etc. as before
shells more numerous.
In all thin cuts
red surface where
moist.

Cut 21

This is a low cut
extending to top of hill

4 ~~5~~ ⁶ feet ~~soil~~ ^{top} layer

Below

The other 3-4 ft is distinctly
modular. Moderate size
& very numerous.

Lower layer yellowish
1-2 ft. ~~soil~~ ^{top} layer
coarser material. Traces
of marine origin?

Cut 22 - 10 ft. deep. '87

Irregular, slender &
irregular.

With traces of soft
yellowish 7 ft. from
top.

also $\frac{1}{2}$ ft from top
no shells.

Aug. 27. - Thur.

Went to Cook's -

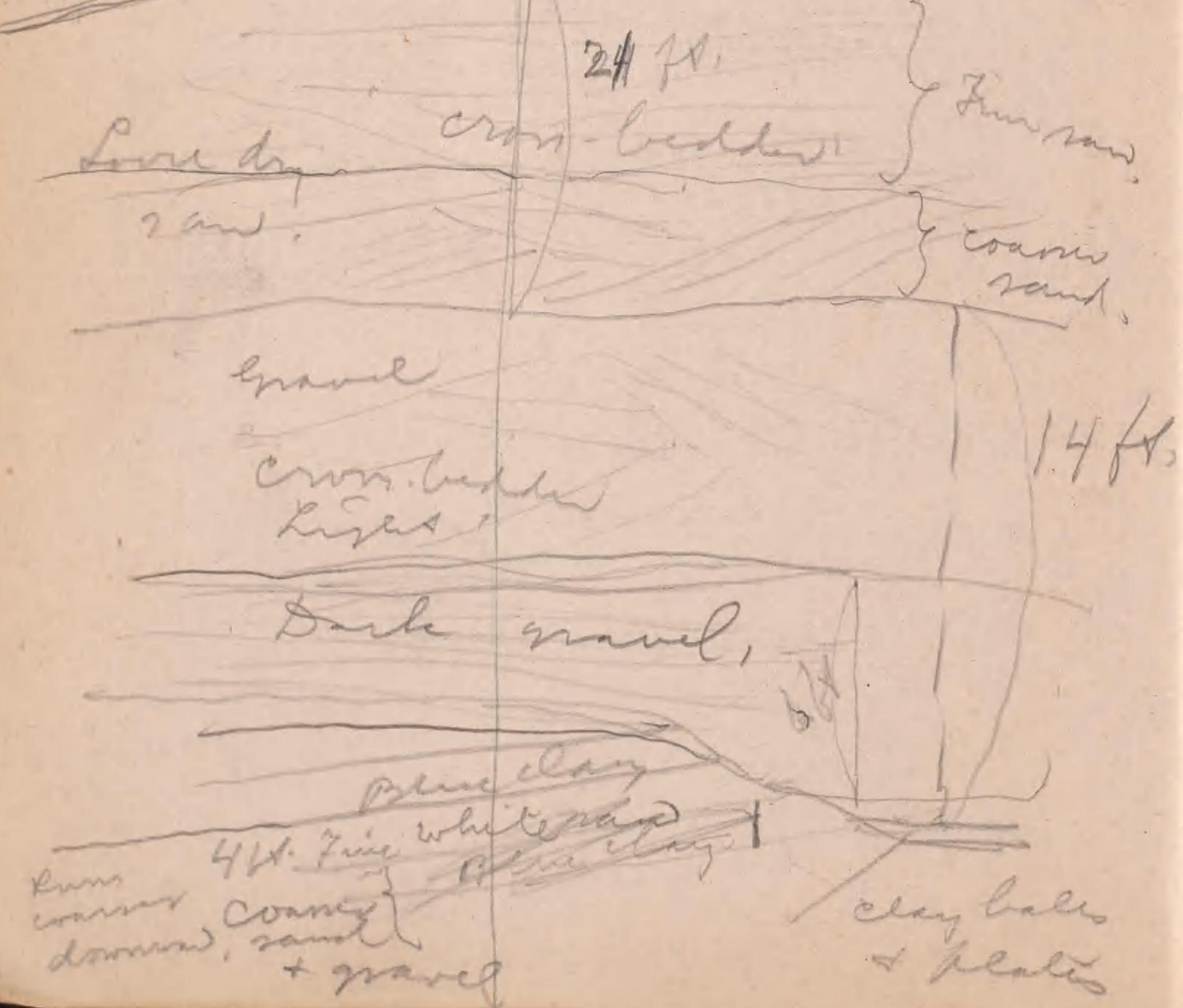
the lowest ft in road,
a little west of Claude

Cook's house = 0.

Road off house = 5

Entrance to his = ~~17~~¹⁷ ft

~~Soil~~ ~~top of blue clay~~ = 14 ft
~~Bottom of his~~ - to blue clay = ~~83~~
~~soil~~ ~~13 ft~~
~~the~~ ~~drip~~

Limestone
nodular plate

The sand is rather fine, 89
 distinctly & beautifully cross-bedded.
 The upper part is all fine
 sand, with iron streaks; lower
 part has sand & layers of
 small pebbles. It also has
 streaks & cloudings of iron.
 The lower sand is marked
 off by an oxidized band,
 rather sharp above.

The light sand, rising 6 ft
 & ft., is rather gravel,
 cross-bedded, with occasional
 small boulders (4 in, etc.).

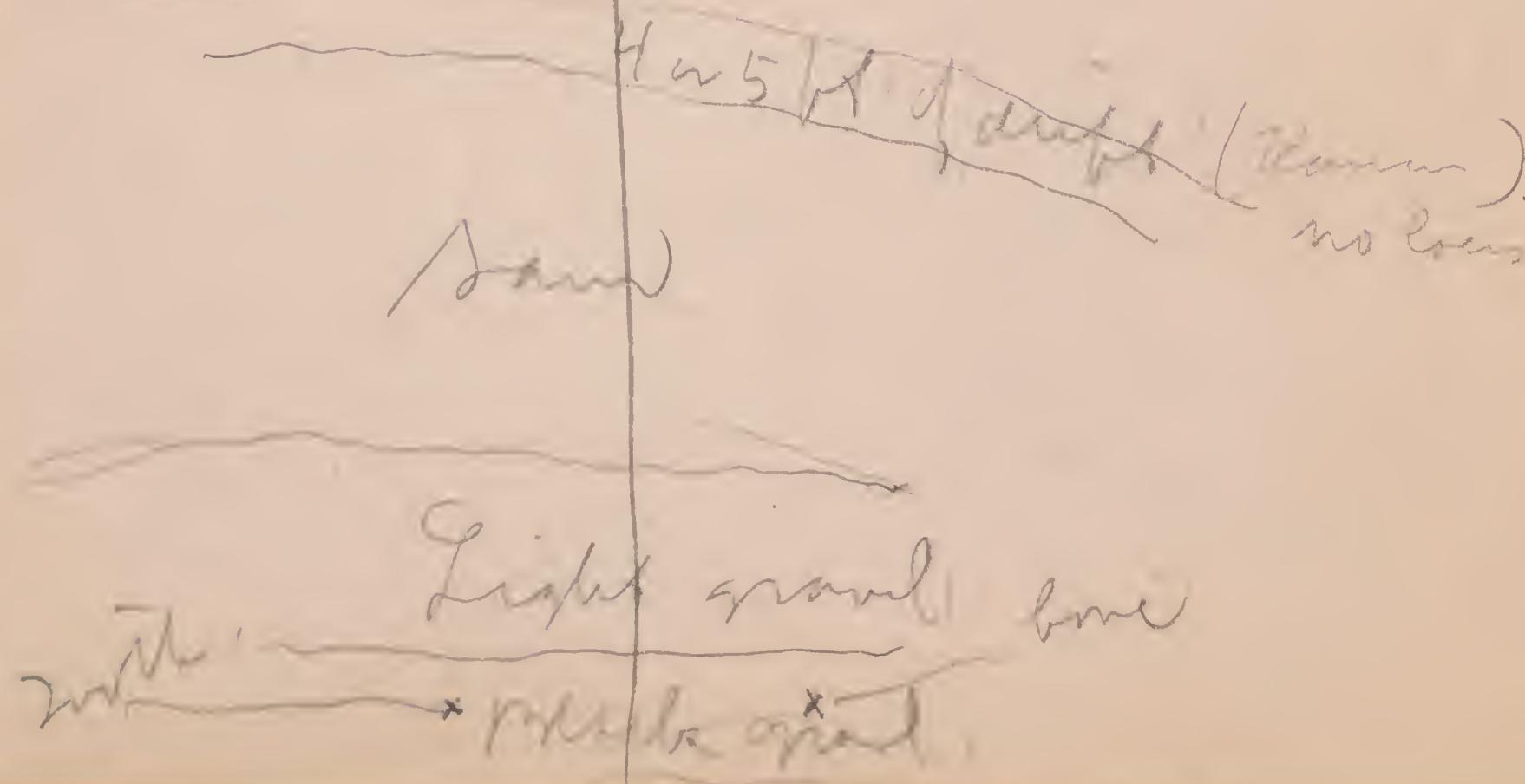
It is darker than sand
 above (more iron) and is
 sharply set off. Also
 rather strongly oxidized above
 for a foot or two.

The lower gravel has much
 black stuff in streaks,

90 Brns and scattered all
through bottle gravel,
the clay came from
blue gravel, & the m
means today from light
gravel.

The marl-colored tools &
bone were taken from
black loam, about 5 ft.
above its base. They were
at same level.

The section on p. 88 is
down looking E.
Looking S. section looks
thus:



91 The sand is separated
from blue drift by a layer
of nodular plates, usually
2-4 inches thick.

Above this is a layer of
blue Kanner drift, which
becomes yellowish above (with
rim). The pebbles in the
upper part are the usual
yellow fine, white coarse
pebbles of the Kanner.

There is a steady downward
layer in lower part of
blue Kanner & some
in blue above.

Rough above pit reads 55 ft.
Loam begins about at top
& runs up hill.

The river rises to 160 ft
above bottom of pit (reading = 157)

I took out a nicely bleached
lithic from Kewan blue
clay, - it was hard, - & thin
below middle,

16 ft

Top bank

at Cox's well 105 ft. above bottom
(Rising = 102) 93
well reaches 127 ft.
below water struck.
clay & blue joints - 40 ft.
sand & gravel, rest.
there water in gravel,
the same in pit
runs out with
very com, the
gravel offering
little drift.

The higher part of the
ridge above pit is loess
loamy back with small
cut-steps, etc.

Loess appears well along above
road & in road, but
it is thin, & below road
& gravel shows in bed, which
yields few com.

Cut 189

Forstf iron yellow
 iron nodules - upper
 nodule layer not distinct
 12 ft. deep.

Red ferruginous iron
 just at road level.

Cut 87 Grind - 6 ft
 deep. fragment
 of shale.

Cut 88 extends S. up
 hill, & seems to be like
 cut 87.

Wains cut abut on along
 road between cut 89 &
 cross cut, & they all
 show nodular layer above,
 with numerous small
 irregular nodules.

96 Aug. 28. Friday

Parker basket & poem.

Continues work on back of Mo. Day.

Commenced with cut 23.

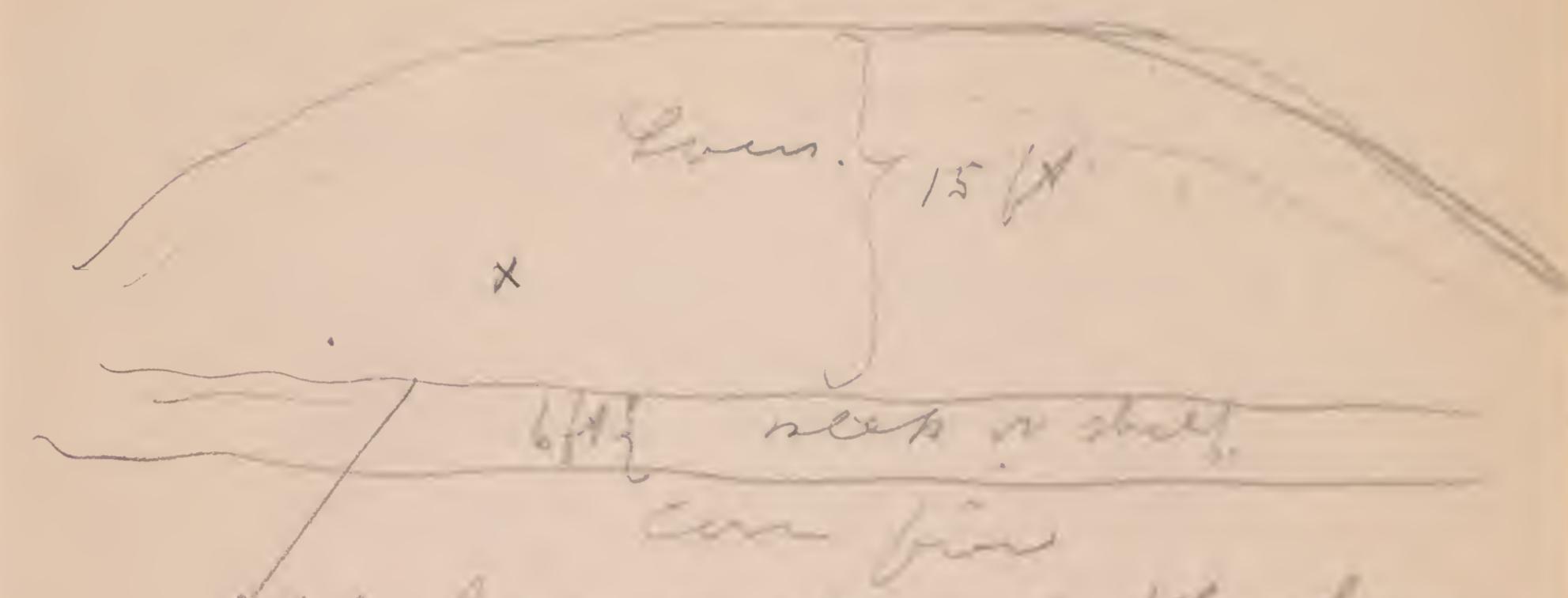
Cut 23.

(Really starts at cut. 28)

Cut 28. This is on S. side of
Rashill center, & is about
8 ft. deep, - on slope down toward E.
It is shrimpy & overgrown, but
as far as I can see it shows
fine grain, light, light yellow
upland loam, - no fossils or
nodules being visible, but
exposure not clean.

Cut 29 is in yard, where grading
expose it. It is irregular
perhaps 10 ft. deep in places,
pretty shrimpy, & as far
as I can see like 28.
Cut 30. Is irregular, back of
house.

Cut 26 is over 20 ft deep, 97
& a fine exposure.



The main loam is yellow,
light, with scattered iron
nodules, & scattered shells
I found a little shell
shaver - or about 3 in long
& about 2 in. thick.
& larger only $\frac{1}{2}$ in. thick.

See shells & sample (at x)

Also nodules.

The upper 4 or 5 ft. show
small nodules here
there. Small shells
numerous.

cut 23 - E. side about 18
ft. & more yellowish with
fragments of fossils. Took a few
Tulip Rock samples at 15 ft.
below top.

Modulus about about
the side slumped &
overgrown.

Took sample at W. end
(where cut is 6 ft. deep only.)
at 2 ft. from top in
modular layer.

Also one 6 ft. deep in
top of lower layer.)

Modulus in not seen
in uppermost 3-4 ft.

Cut 24 - On E., N. & W. side
is badly slumped &
overgrown, but as far
as I could see is
same as 23

^{5 mil}
cut 24 is across -
8-12 ft - in is in a
bank end. This about 2 mil
down hill
cut 25 is a road cut 4 ft.
deep & after 2 ft. rotted.
Some shrubs & a few small
modulus. Some yellowish
about 8 ft. below the 170 ft.
point.

Cut 27 is near a low
slumped & overgrown, but
as far as I saw it looks
cut 26. I did not look for
fossils.

If counts of two tools,
the lower is about 117 ft., &
about 8-9 ft. deep &
more or less slumped.
Some limestone in upper
modular layer.

Lower, modulus, etc as before

The river cut extends almost to top of hill, & is about 12 ft. deep. Lava, nodules, etc. (including upper nodular layer) same as before, but I could see no fossils.

Cut 31 is overgrown, & not satisfactory.

Cut 32 shows about 10-12 ft. of yellow lava, now in dump, in yard south, about 14-20 ft. Lava, nodules & fossils as before. Base is about 10 ft. above intersection of cuts.

Cut 33 -

This is mostly yellow lava as before - nodules, shells & all. Upper lava nodules. The fossils - these were mostly in lower part & partly from surface.

Laminations show distinctly on older surfaces.

July 2.
at ~~cut 33~~
18 ft.
Matthew & Laminations.

Cut 34

July 3.
17 ft.
sample

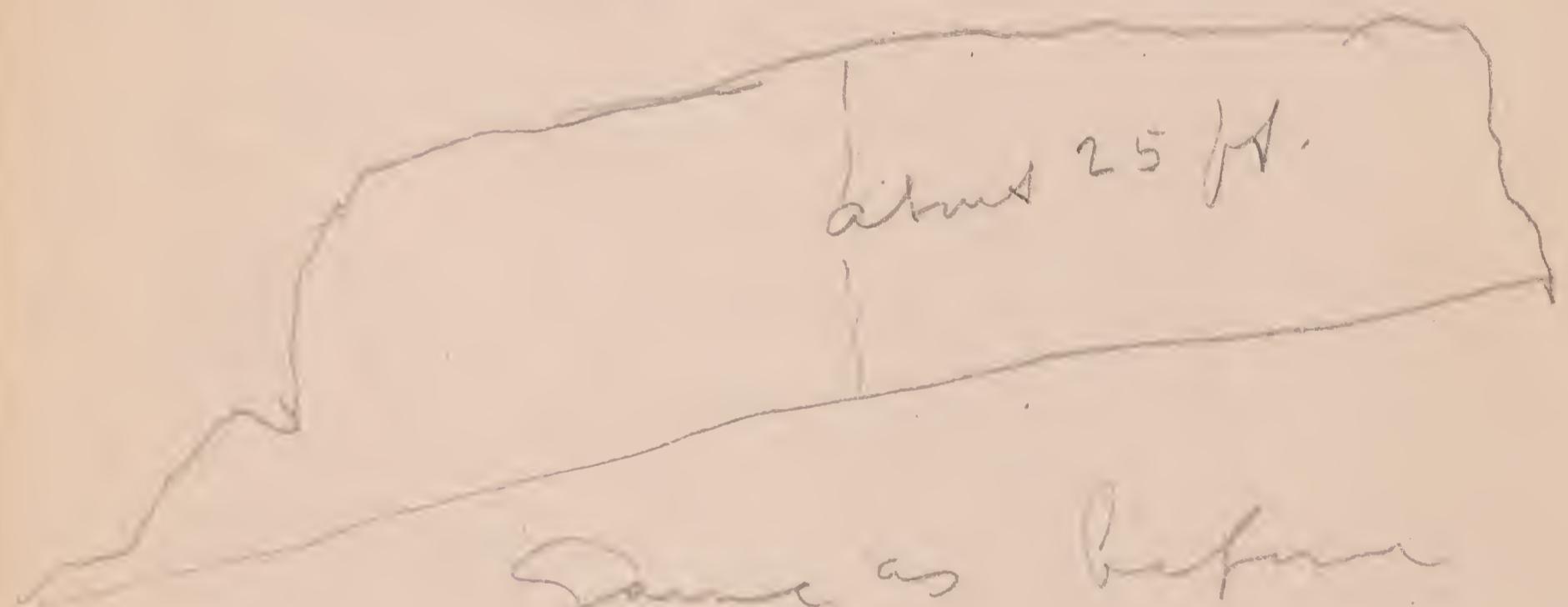
This fresh. They are still cutting. It is yellow lava with chocolate spots. I found one Susan thin in upper nodular layer, also in about 4-5 ft. thick. Took sample 17 ft. from top. The nodular layer = 5 ft. yellow lava = 12 ft.

few nodules appear a thin side, but they do occur. The base of the cut (bed) is packed with shell



Same section here, mostly
all sand. Drop to
lamin. very few. ^{thin}
Lamination distinct on
weathered surface; in lower parts
small box joints.

cut 36 - 2" = size box of joints.



Same as before
moderate lamin.
joints in places in
both 35 & 36.

Lamination distinct on
weathered surface, where
there is no thin overwash.

These cuts are both
downward, as the base is at
base of tree & they cut
more waves.

cut 44 - $\frac{1}{2}$ block.

about 25 ft. 9 ft.

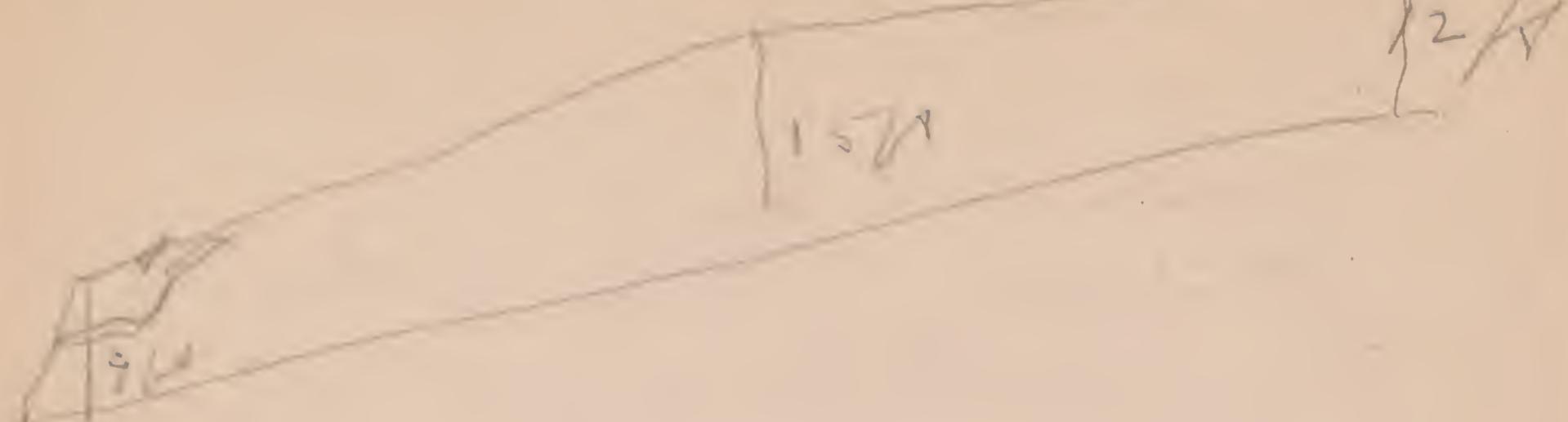
Modular lamination -
modules not very regular.
Gullies few scattered;
Lower layer with some
modules.

All same as
before.

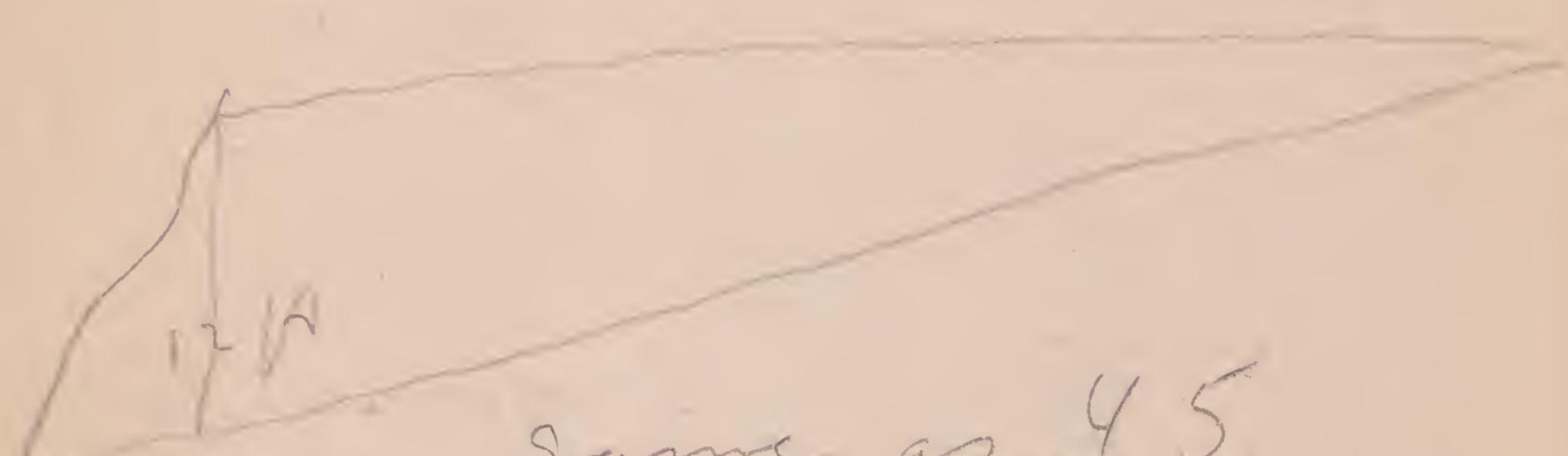
Cut 45 is a block by
yellow loam, few small
modules - very few
gullies.

104

cut 45



cut 46 is continuation
across turn, $\frac{1}{2}$ blk. long.



Same as 45.
Only a very few fragments
of slates, - not identifiable.

Modular layer present, -
nodules few.

105

cut 47 - S. side

samples



Modular layer present,
nodules not many.

Locas as before.
Fossils very few & mostly worn
E. end.

E. side is shaded & worn.
With sample 3 ft from top
(in modular layer) & 12 ft
from top - at base of cut.

106
In afternoon I got up about 4
took first reading at 4⁰⁰ 4²⁰⁰
The day had been exceedingly
hot for the part sunny, though
hazy. On the hills a large and
a fair wind in the morning.
The wind we all saw, was from
W. of S., or S. In afternoon (later
half) it veered to S.E., & blew
that way all night. It was
sufficiently strong to sway branches
most of the time.

When I took first reading the
wind at pm 4 was scarcely
notable, at pm 3 the
strong, at pm 1 strong & at
pm 2 almost nothing.

Aug, 29- Saturday, 107

The sky was cloudy in morn, &
could hear thunder. Wind was
strong enough at 6 o'clock to sway
branches, light dew.

The aneroid set up this
only a difference of 25.2 in.
from 7 pm yesterday 87 am today,
but as wind is from S.E. the
point (sta. 1) does not catch
the wind.

When I took pm readings at
7 am, sta. 4 felt breeze a
little (very little), sta. 3 more
decidedly; sta. 1 fairly, and
sta. 2 scarcely at all.

I clinched Central Proj. 1 +
2 at 7, and they were less
than $\frac{1}{2}$ degree apart.

At 8 o'clock only old sta. 9
was exposed to only S.E. breeze &
new station scarcely at all.

10th

at sta 4. 8⁰⁰ 75¹/2-70
on top of hill. 75-70
going down
(5211 ft fm 950-955)
in top
(4407 fm 940-945
at 4)

Again at 9 checked
Psych 1 & 2 (Centro) &
from them less than $\frac{1}{2}$ dyn.
apart. In both cases
the dry thermometer
registered nearly 3° more on
no. 1.

Readings at Pans 3 & 4 at
8 & 9 were 20-25 min.
after the barom. But always
in order 1, 2, 4, 3.

At 9 - 1 was rainy & somewhat
windy, 2, cloudy & quiet,
4 (old) quite windy, 4 (new) about quiet,
3 - quite windy & both 3 & 4 sunny

*Harold Fischer
is helping*

^{10th}
at 10. no. 2 was slightly rainy
(through leaves) & a gentle
breeze stirs leaves.
no. 1 quite windy, sunny

at 4 (old) sunny & cloudy
4 (new) sunless wind & cloudy

at 10th value at 3 was 529 ft
a minute.

at top of ridge = 940 ft. fm
(cloudy)

78 - 70¹/2 - 76 of new
77 - 70 - 74 of the 3

at 10 & 10th action on
freezing in the north - one
hear thundering.
Part of the bar. for 10-11 min
sunny.

at 11 - 2 cloudy,
1 cloudy
4^{old} cloudy & hazy
4^{new} somewhat sunny & less win
at 3 " " some "

86-74 - at 6th of nose - 3 +
after reading at (3)
(3 - 84²·72¹)

at 12 - station 2 sun (shade
of trees) + little gust
station 1 - sun + wind
" 4 (10) sun + wind
4 (sun) " " less "

The Cape evap. at 1/2) was
partly in shade & partly in
sun (between trees)

at 1 o'clock it was quite
sunny (though hazy) & the
apparatus at 2 caught
bits of sunlight, the wind
had veered to due S.

at 2 1/2 sun + wind, at
sun & almost none.

at 3 wind very strong.

the - morning last (11)
1/2 is about 2 miles wide +
extreme:
Rhus glabra (low)
Syrphocarpe (low)
Purshia (,)
Amelanchier canescens
Monarda gracilis
Gerardia ^{rosea} (high)
aster sericeus
Amaranthus cylindricus
Helianthus (get spec.)
" rigidus
Ceanothus
Fraxinus
Jasminum nudiflorum (low)
Lapathum album
Young greenish.
Poa pratense
Lithophragma glaucinum
veridulus

At 2 o'clock it was still quite sunny (but hazy) & the wind shifted to W. of S. & then quite strong.

At 3 o'clock same, hazy at 6th floor new 4, very windy at 3, & also at 1, & just quots at 2. Wind W. of S.

At 4 o'clock - Hazy sunny, with wind moderate at obs 4, light at new 4 & very strong at 3. Rem't.

At 2, very little gusts.

At 5 o'clock. Hazy sunny, brighter than at 4, wind S., sky nearly clear. At 2 calm; at 1 moderate breeze, at obs 4 - sunny & good breeze at new 4 nearly calm & sunny at 3 (but hazy) & stiff breeze

When wind is from due S. the outside S. of the 1. winds now, as is frequent.

At 6 o'clock

2 - same sun, wind no breeze.

1 - sunny & breezy

4 (obs) sunny & breezy

4 (new) - sunny & stiff breeze

3 - sunny & breezy & a moderate breeze.

At 7 o'clock

all in shade & wind somewhat subsiding.

114 Aug. 30-1908

Set up one station at
6th & Woolworth Ave, on
a ridge just opposite Woolworth
& W. of 6th. This was
timbered, but saw down only
a few trees. It faces N.
& is well exposed S. & S. E.
(i.e. there are no buildings
to interfere, the field being
clear for an exposure.
The area is now covered
with blue grass, and
of course some weeds.

The area is typically
of the time usually
covered with forest on
the Nebraska side.

Mr. Gilder says in digging
he finds black soil on
W. side of river (on ridges)

but not on E. side, 115
My Council Bluffs
stations were same as
before.

116 Aug. 31 Monday

Rain mostly all day.
Returned to Mr. Valley at noon
& at 4 o'clock drove out to
Cook's first.

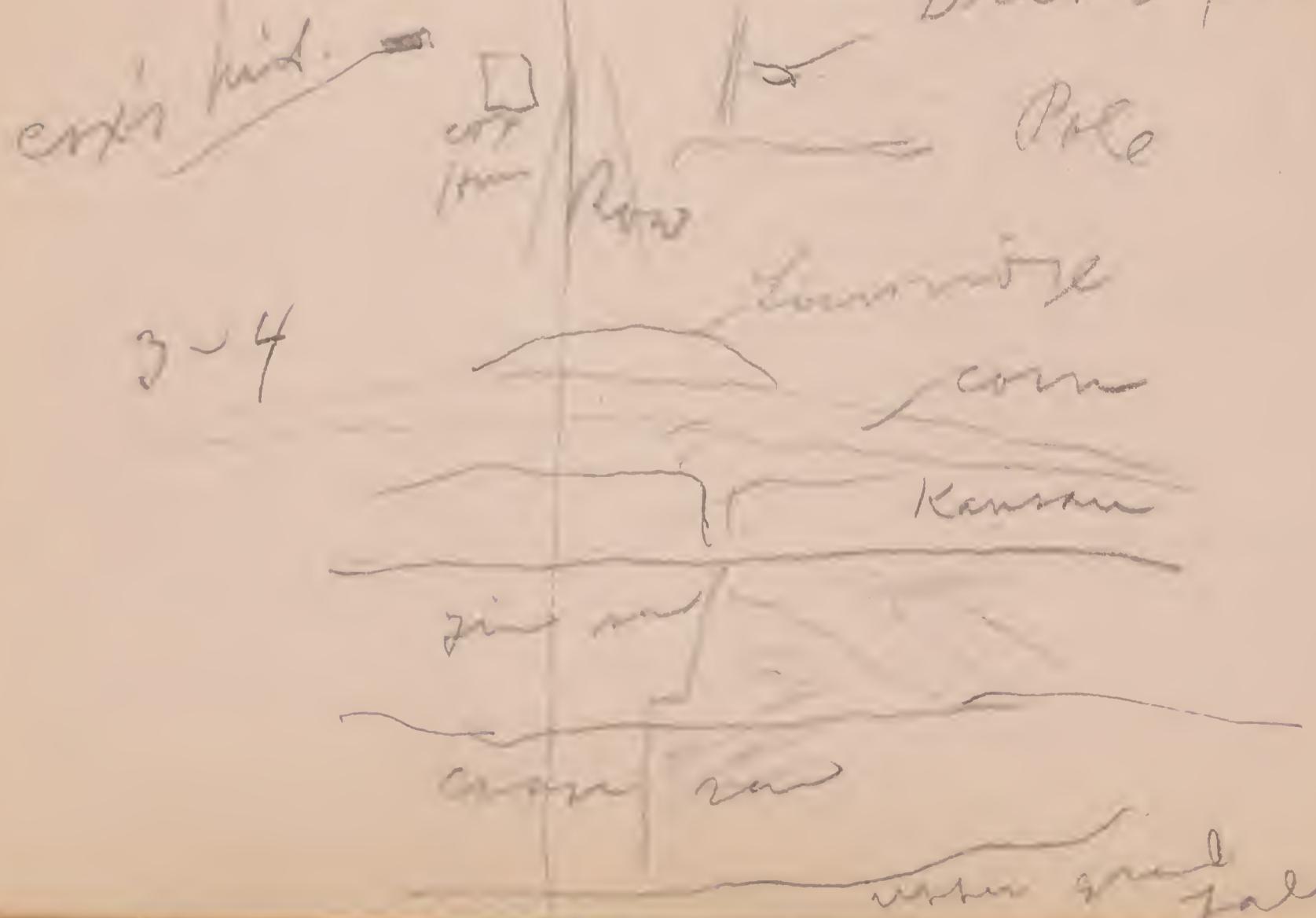
The drift above saw (Kawan)
is heavy bluish gray
clay, with porches of sand,
pebbles & oxidized stuff.
There is no real yellow
fine clay.

Dark plasters.

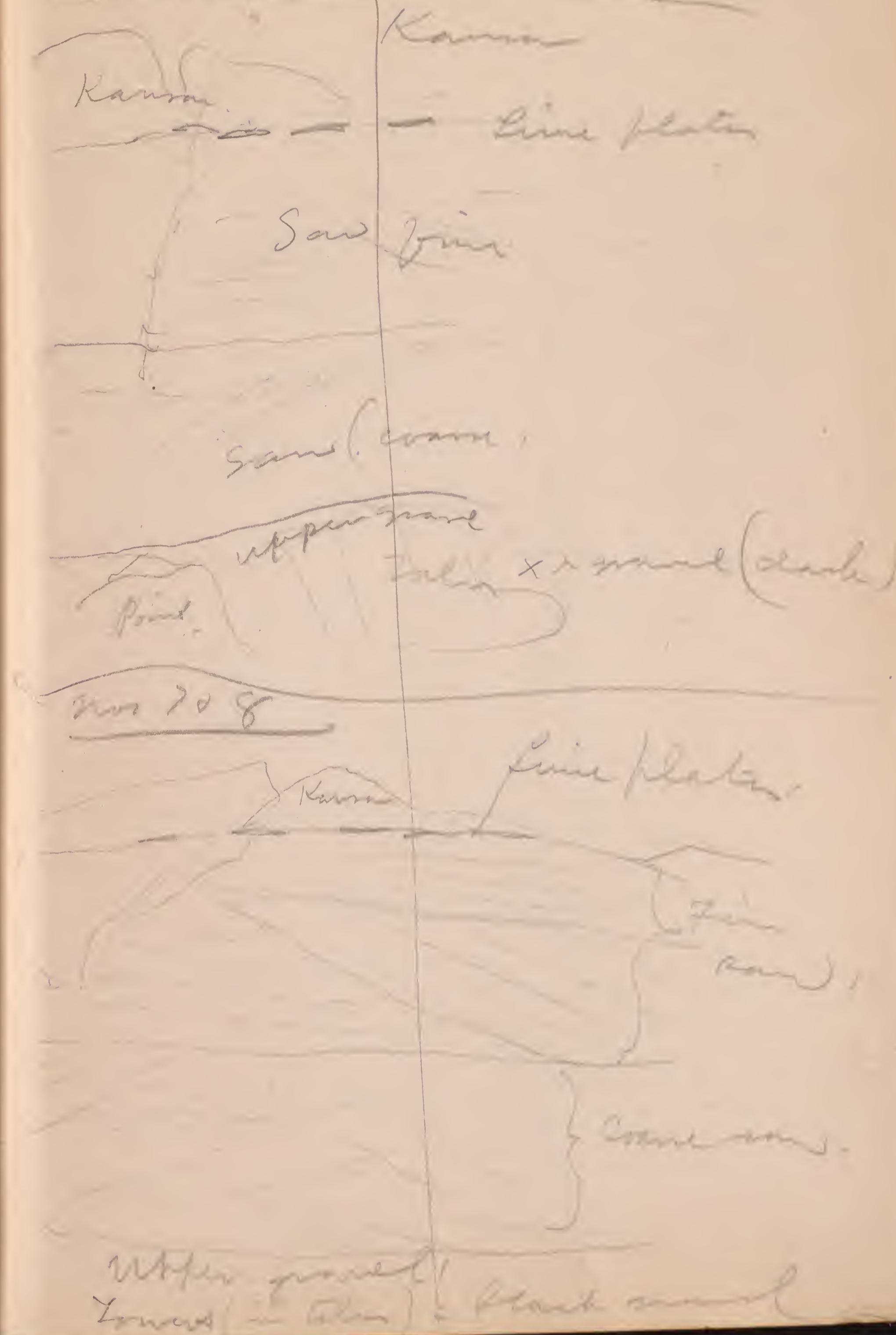
1 - Look E. turn Cook's house
& drifts in which
travel bits are found

2. Kawan view

Dicks fit.



117 (dark sample of Kawan
just above 3 ft. from base
Plot 546)



116 From piece of limestone plate
with glacial markings, possibly
that this layer has been found
before in same. (sic sp.)

The stones, & pebbles in
gravel layers are worn &
rounded - even when
angular, not sharp.

Contains in Karsa -
yellow granite, greenish
and some pink (slightly
fresh) etc.

There are also some sandstones
(some large) in both
sand & gravel.

9- Lick N. of E Cox's pit
is just above & to right of
top of small tree between
Cox's house & barn.

10- In center of fields &
just above the surface
John Duhé's pit. Looking
S. & E from same pt.

117 The wind was northly, &
the sky was a low haze or
it has been all the time.

Spent evening in writing
letters, & packing for trip to

Sep. 1 - Tues, 1908

Day very fine, pleasant, about
no wind.

Started for Oruava at 7:05 AM.

Reached Oruava in time to
get freight for Turin.

Reached Turin at 9, & met
Mr. ^{A. B.} Bird Ellett at depot.

He has a sand pit up
the small valley on N. side
which shows in about
12 ft. of sand, cross-bedded
beautifully, - coarse sand &
fine gravel abounding
in streaks. It is shaded
with the ripper, a sand

layer in Mo. Valley. } Cox's pit at
Mo. Valley. } there are
also nodules of blue joint
clay, as at Cox's.

Oxidized streaks & bands are
also common.

The clay nodules were
evidently rolled into
their uniform, cylindrical
or spherical form by water
on the old bars ^{and bottoms} and
then covered by other sand,

1st Arcola wood. Fisher's wood
Juglans nigra
Ulmus fulva
Salix amygdaloides
Celtis -
Fraxinus canescens
Tilia americana
Symplocos tinctoria
Rhus glabra
Paulownia
Partonocissus tricuspidata
Ribes missouri
Cornus americana
Cornus canadensis?
" paniculata
Acer negundo
Populus deltoides
Cotinus -
Vitis vulpina
Crataegus mollis
Salix discolor?
Rubus occidentalis (Rev)
Prunus americana

123
Found on dry soil a
little orange - tan
like crab
✓ Photo 1-2 Today N.W. arm
Porter's valley.
✓ Photo 3-4 Today N. for some
time
✓ Photo 5-6 Today ~~2-3~~ 25. at
myt on patches of
✓ Photo 7-8 Today so far
some point

1st cut 2 m. on top of dunes
show 15-18% of yellow
brown - laminae on
weathered parts

In some his books out
gathered volumes of Spanish
poetry & a volume
of folk

Add to mix, light
Cedrela (rubra)
Maclura - small
Acacia anum

App. 2-1904

Went back to Marin.

✓ Perot 21022 lastly h

View of fit at 2 mi

IPhoto 2312 today N.

on S. side house in the
huff in daytime are fish, be
they on downtown the paper
+ fully on a short blast

8' ↑
High Cut
at
bottom of
slope on
slope of
ridge
 $X = 190\text{ ft}$
above m
 $0 = 115\text{ ft}$
cut $1 = 50\text{ ft}$

Northward

over
Brach
tree hill
higher.



1st crevices (in scuttles his)

Phacelia - *Encalypta*
Potentilla - *mus*
Luzula -
Phlox -
Segmentaria arctica
Plantago lanceolata
Amicula (or *Mytilina*)
Valeriana triplinervia
Plantago debilis?
Polygala?
~~Pyrola~~ *Pyrola* *alpina*
~~Pyrola~~ *Saxifrage* *blennioides*
Valeriana -
Grindelia.

1st Photo 27 & 28 - a pit
and 2 ft (super high up)



Form | small pinnae of 127
worn base in upper
part of sandy layer (above
of his.)
(or W)

On E. side of pit (above
shelf) this shows

Reddish joint layer
5-6 ft

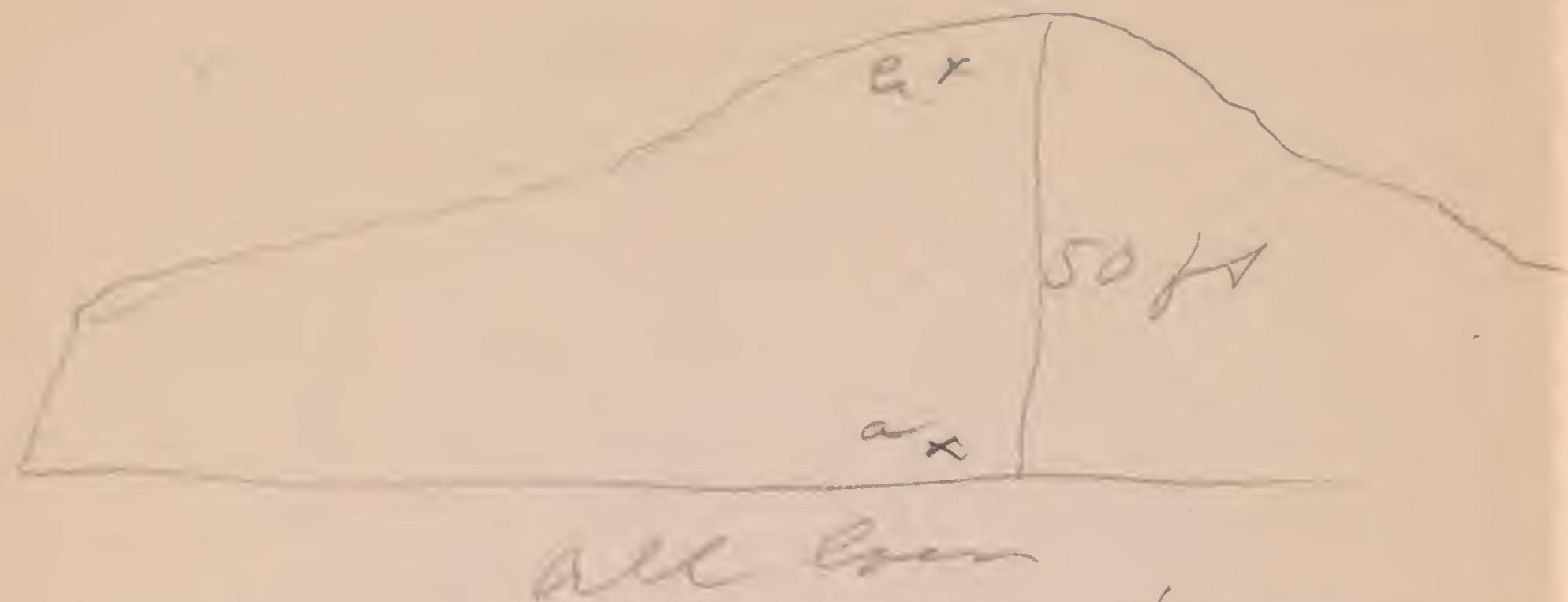
~~1 ft +~~ Black thick layer
~~and the~~
~~1 ft + 2 ft brown~~
~~small brown~~
~~strong oxidized~~

~~1 ft~~ ~~black~~
~~black~~ ~~and~~

~~3 ft~~ ~~black~~
~~black~~ ~~(oxidized)~~

Total exposure now is
now about 12 ft.

The man in big for a
large ribbon (body free) in
a good (small) on a
table - future, here, the pit



Upward low in part, 2 a
3 ft. low small nodules
before.

sample (a) 2 ft. above low
" (b) 2" Cotton top

at 12° stated for badland.

The road follows about 10°
50 ft. above bottom.

In the stretch from ^{or gravel bed} 12°
cut 3- Kansan dips, shows in
several places in road. At cut

3 a little low appears in
Kansan, with fruits you described
✓ book photo 29 - looking
nw.

¹²⁷
cut 4 - also on higher point of
road, is irregular, on N. side
road, 5-7 ft. deep, & shows
upper 3 ft (small) nodules low.
Lower part rather uniform
yellow (brownish) low in bed
nodules & few shells. See br.
cut 5 - on N. side

Shows 1 ft yellow low
with few small nodules, later
& more small in low,
no fossils.

cut 6 is similar 9 ft. deep
no shell.

This shows laminations and
nodos which may be due
to iron bearing streaks
against it, - though it
follows contour & is regular.

Kansan gravel shows in road
This is right at angle of road
on N. side. It is again a
marked higher point.

That laminations cannot be
seen with the low beds O.R.

170 The inter. part is soft, brown,
and may be partly overwash.
Cut 7 is at next mile. Right
at road (nw. sec.) The bank
& roadbed show Kansan drift
only, but away up, probably
75 ft. higher there is quite a
bank of loess due to slumping
rending nearly to top. It is
yellow loess.

Cut 8 is a similar slumped bank
& loess, away up near top,
& nw. of road.

Kansan drift appears along road
Cut 9. This goes up hill &
is slumped like 2 previous.

Plot 30 is taken N. of E.

The road is 35 ft above creek
(above) & shows Kansan drift (at
this the highest point.)

Cut 9 is — ft. above road
(to bank) & is about 6 ft
high

drift still shows on slope
near 60 ft. above road.

Base of cut (bottom line) 137
is 80 ft. above road, cut is
30-45 ft. high, & top of
bank is 165 ft. above road
I found fragments of loess &
a pebble on top & on sides
worn. & flint chips.

A gravel pit lies on
& west of (S.W. of) Cut 8
cross-cut, etc., & is easily
seen. Large, interbedded
5-6 ft. exposures.

Where there is much loose
gravel in road & near
it is probably this
& Kansan drift.

"Soils in cut 9 are
much more abundant on
6 miles of cut.

132



500 Honey locust
on maple
bottom

Black locust not
uncommon on banks
slopes.

in

Box. 1 - Aug. 25, 1908

133

5 - same as (3) p. 22

6 - Looking N. from point to ave 1 - p. 22.

7 - same as (6)

8 - Looking NW. from same pt. - across valley,
or up valley - p. 22.

9 - Council Bluffs - D. across ravine - p. 42

10 " " " - S. into Fairmount - "

11 " " " E. & S. from my station. "

12 " " " N. & E. " " " same pocket "

13 } " " cut on 9th Ave. - p. 43

14 } " " " Looking N. at cut - 9th ave. "

15 } " " "

16 } " " thin

1 - spotted - p. 22

2 - looking S. at avail. (see anemometer) - p. 22

3 - " " " into ave along Snyder's hollow. p. 22

4 - same as (3)

17 } Council Bluffs - nearer view of
18 } nodules in cut on 9th ave.

all not marked on O.K.

134 Box, 2 Aug. 25, 1908

19 } B Segments up station 2 - p. 62
20 } ~~Skinned~~
21 } ~~Skinned~~, " " "
22 } ~~not very good~~
23 } Looking up Soldier riv. from bridge
 | S. river sec. 28 - p. 64.
24 } good.
 | ~~thin (rust)~~
25 } Looking up Mo. river from bar W.
 | of Nodale - p. 64.
26 } O.K.
 | ~~thin (rust)~~
27 } Mo. bar showing small p. 64
 | ~~Malix florulenta~~
28 } O.K.
29 } ~~and~~ looking S. into collared fault. p. 67
30 } O.K.
5 } sand dune with Cania + Cottonwood
6 } + a little Dalea - p. 67.
7 } sand dune + pool.
8 } all not marked are O.K.

37 axis left, looking S.E.

4

5 } crospit (creamy) looking S. of E.

135

7 } Looking E. (still newer) ex's
8 } gravel pit, Mo. Valley.

9 } Looking N. toward coal pit
10 } " 8. E. " Dicks "

May 4 - Sep. 4 - 1908

11 } From Fishers cliff - NW. across prairie
2 } valley, 9/1/08

3 } Looking N. from same point,
4 } 9/1/08.

5 } Looking E. & S. at first in
6 } United's valley - 9/1/08.

7 } Looking S. E. from same point.

8 } Maple Valley - looking toward Castan 9/1/08

9 } view of Bluff near Dicks 9/1/08

10 } - view (late).

11 } Looking N. - View of pit at Inman
12 } 9/2/08

13 } Looking N. from ridge just above
14 } Inman (from x), 9/2/08

15 } Sand in pit above - from
16 } cross bedding - 9/2/08

Box Maples cor. (blown on top)
11412 - Logan, 3/4 1904.

11412- mapes your, 19 1907
272 several inf, turn 9/3 1908.

27) Selenite Mts., Gunn 1/3 1200
28) S. 126. : Gunn 1/3 0

28) 80126 Sun 11/3
29 - End of loco's wire Sun 11/9

29 - End of road to cut 9 - June $\frac{1}{3}$ '08
30 N. of E. view of cut cut 9 - June $\frac{1}{3}$ '08

5.0% P₂O₅ = 1000 kg/ha

Returns from Oran for
water - Monday, Aug. 24

Monday 11 -

Tuesday - 11 out dinner & supper

Wednesday - 11 " breakfast

Thursday - 11 " supper.

Friday 11 " dinner & supper

Saturday - 1 " dinner & supper
2 laundry

Monday - Had dinner, supper, lodge
fees - Breakfast

Aug. 25 - Modale
middle out meal 25
Feed - car .35
Gear - Valleyland 1.25
Gear - robinson 2.00
Aug. 26 - Bicycle - expens 1.25
Lunch - morning .25
Aug. 27 - Lanche 80 Baskit 5 .30
Aug. 28 - " 25. Pipette 10 .35
Aug. 29 - " 25. Fare & Oak .68
car fare .65
Aug. 30 - (Sunday)
Aug. 31 - Fare & living 100
telegram to Son 40 Post 10
Hotel Valley Aug. 24-29 - 6.50
Sept. 1 - Fare to Oran .77
Fare to Irian .14
Sept. 2 - Lunch .25
Castan - lunch 25 ~~25~~ ⁷⁵ .25
Sept. 3 - Castan - living, lunch 100 ¹⁰⁰ .25
Irian - lunch 25 -
Fare bus to Mo. Dale 77
Oran - hotel 1.00

Get - Engineering News
220 Broadway, New York.

Aug. 13 - 1908

contains Gramsky's
article
Exploration from the
Salton Sea

Aug. 17 - Cafans
Meals Council Bluff ~~10.00~~ .85
" RR fare to Mo. Valley ~~10.00~~ .70
" 18 " 15.5
" 19
" 20 - Lunch Biebetown .50
 Horse-beans .20
 Lumber, Mo. Valley .45
pri. " 21. Papers ²⁰ ~~5~~ ⁵ ¹⁰ ~~10~~ .35
Sdr. " 22 - Hotel Queen Aug. 18-22 - 9.00
 Living, Bier & Rollin 5.00
Aug. 18-20 - 5.00
PR. to Council Bluff .43
 coffee .30
 smoke .35
" 24 Cafan Ondre .60

Account closed to

Aug. 24, 1908.

Aug. 7, 1908

RR fare to Burlington	\$ 1.54
Hotel	.80
car fare	.10
Return to Iowa City	1.54
	\$ 3.68

Aug. 8, 1908.

1 Hack, Iowa City	.25
RR. fare to Des Moim	2.41
Hotel	.50
RR fare to Council Bluff	2.86
RR fare to Mo. Valley	.43
Aug. 10, 1908 (Mo. Valley)	
Bottles & corks	.10
Vials & corks	.10
Fruit jar ⁵ , glass tubes ¹⁵ , file ⁵	.25
5 ft. measure (rule) hair	.40
note book ⁵ , mileage ⁵	.10

Aug. 11 1908 (Mo. Valley)

Pins ⁵ , thread ⁵ , cheese cloth ⁵ , rubber band ⁵	.20
clips ⁵ , ruler ⁵	.10

Aug. 12 - RR fare to Logan .17
 two meals 1.00
 return .17

Aug. 13 -

Aug. 14 - RR to & from Logan .34
 two meals 1.00
" 15 - Cork, tubing, & bottles .20
 fare to Soda Co. Bluff. carbon ²⁰ .43 + 70 1.13
 Hotel meals .10

an outcrop (as miners would)

At Durkee -

deep well - down cut road
ask Mr. and Mrs. J. Patterson
at Nat. Bank.

{ C.R. Sturt - boring wells at
Woodbine. at Mo. Valley

W.H. Wright - at 49 m

claim gold in gravel
at lake (dry) near Durkee.

On ridge west of Durkee

found coal - green - mottled

(in 50 ft. or less S.E. of Durkee
and 2 miles)

(See contemporaneous Mo. Valley
at Logan).

In the Mrs. Louis Snyder -

a brick house in Calhoun

(at its total in town)

(see my file of Rec.)

at 2000 ft. above sea level
at 3.5 miles, ad. of Independence

Survey no. 2000 ft. below.

For dry weather at Woodbine
site -

10/19 1912

1430

1500 act.

Miner
M. M.

{ 375

{ 6.2

29

24

24

21

21

21

21

10.2

11

14

13

14

14

14

14

14

14

14

14

14

14

14

14

14

14

UNIVERSITY BOOK STORE
ON THE CORNER
BOOKS, STATIONERY & COLLEGE JEWELRY.
IOWA CITY, IOWA.

